MODERN PAPAGO BASKETRY

by

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A Thesis

submitted to the faculty of the

Department of Anthropology

in partial fulfillment of

the requirements for the degree of

Master of Arts

in the Graduate College

University of Arizona

1943

Approved: Harry T. Getty, May 6, 1943

Director of Thesis Date

PREFACE

A study of modern Papago basketry was made at the suggestion of Dr. Emil W. Haury who has been conducting a series of anthropological studies in Papagueria under the auspices of the Department of Anthropology of the University of Arizona.

In making this study I was invaluably assisted by the cooperation of the Papago Arts and Crafts Board. I should like to thank their manager and treasurer, Mrs. Anita Chico Pablo, for taking me to the villages, answering my many questions, and for introducing me to basket makers. I should also like to thank the councelor of the Board, Alden W. Jones, for his whole-hearted cooperation, helpful suggestions, and for giving me the information he has obtained on Papago village histories. I would also like to express my appreciation for the help given me by Dr. Emil W. Haury and Harry T. Getty, who made many suggestions on methods of collecting and presenting data; William Kurath, who assisted with the transcription of Papago words; Mr. and Mrs. Juan Xavier, who made possible a brief comparative study of Pima basketry; the Papago Tribal Council and Mr. W. Wade Head, who gave the permission for my field work; Dr. Forrest Shreve, who identified the plant materials; Carr Tuthill, who took many of the photographs; and the following people who have so gladly contributed their knowledge pertaining to Papago basketry:

(In the text these informants will be referred to by initial)

(A.C.P.) Anita Chico Pablo
Treasurer and manager of the Papago Arts and Crafts Board. Her home is Ali Chukson.[1]

(A.P.) Abraham Pablo
A policeman who lives in Gu Achi. He knows considerable Papago history.

(A.T.) Anita Thomas
A very good basket maker who lives in Kohatk.

(C.J.) Clamian Juan
A basket maker who lives in Ko Vaya and Anegam.

(C.L.) Christina Lopez
A basket maker who lives in Pisinemo.

(D.C.) Delphine Castillo
Also uses the name of Delphine Stevens. A young basket maker who lives at Koson Vaya. Although she is only nineteen years old she is one of the best basket makers on the Papago Reservation.

(E.C.) Eliza Castillo (Stevens)
A basket maker who lives in Koson Vaya. She is Delphine Castillo's mother.

(F.S.H.) Mrs. F. S. Herndon
A Presbyterian missionary who worked among the Papago from 1894 to 1920. She has a fine collection of baskets and notebooks of Papago legends and photographs.

(J.A.) Juanita Ahil
A basket maker who lives in Ali Chukson. She is Anita Pablo's sister.

(J.N.) Jose Narcho
An elderly Papago who remembers the old days.

(J. R.) Jose Ramon
A middle-aged Papago who lives in Quijotoa. He has a calendar record which his father started in a notebook. The pencil marks in the notebook are of the same type as those used on the calendar sticks.

(L.B.) Laura Baustemente
A basket and keeho maker who lives in Pan Tak. She also uses the name of Theresa Lopez and Laura Sacrimento.

---

[1]All Papago village names used in this paper are spelled according to the U.S. Department of Interior, Place Names of Papago, Gila Bend and San Xavier Indian Reservations, 1942.

(L.J.) Lupe Johnson
A very fine interpreter. She is from San Miguel but is now living in Sells. She is Regina Pablo's sister.

(L.T.) Lena Thomas
A very good basket maker from Kohatk. She is Anita Thomas' older sister.

(M.A.) Margaret Ascension
A basket maker who lives in Ali Chukson.

(M.L.) Manuel Lowe
An elderly man who was born in Kohatk of a Papago father and a Pima mother, and has lived on the Pima Reservation since early childhood. He knows many of the old Pima songs and stories.

(M.M.) Margaret Montana
A basket maker who lives in Hickiwan.

(R.) Mrs. Richmond
Formerly Mrs. Tracy, a white woman who has worked in trading posts on the Reservation since 1926.

(R.J.) Rosaria Juan
A basket maker who lives in Anegam.

(R.K.M.) Mrs. Ruby Kassel Miller
A school teacher at Gu Achi who traded sewing materials for baskets from 1935 to 1942.

(R.P.) Regina Pablo
A basket maker who lived in San Miguel until she married and moved to Gu Oidak. She is Lupe Johnson's sister.

(S.I.) Susie Ignacio
A Papago girl who is writing Papago stories for W. Kurath at the University of Arizona.

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INTRODUCTION

The primary purpose of this paper is to analyze the basketry industry of the Papago Indians as it exists today, in an attempt to determine what changes have taken place in basketry during increasing contacts with western civilization and the processes involved in the changes. In order to ascertain all the changes, aboriginal and contemporary basketry have been studied, first as a trait in the entire Papago culture, and second as a complex of technological, sociological and economic traits.

The study of contemporary basketry as a trait in the entire Papago culture is based on a first-hand knowledge of the Papago culture gathered during the fall, winter, and spring of 1941-2. The technological traits of the basketry complex are based on the following information obtained on 1076 coiled baskets: materials used, form and dimensions, technic of manufacture (including method of starting, method of sewing, direction of work, work surface, shape of foundation, number of coils and stitches per five centimeters, and method of splicing), method of decoration (including technic, material and secondary features). For the twenty-seven plaited baskets available, the following information was considered important: pertinent facts about the maker or the history of the basket, material, form and dimensions, technic of manufacture (including direction, rhythm, width of elements, rim

treatment, corner treatment), and method of decoration. The socio-economic traits of contemporary basketry were determined from informants and from the files of the Papago Arts and Crafts Board.

An analysis of the various aspects of aboriginal basketry was secured primarily from Mary Lois Kissell's study of Papago and Pima basketry.[1] When Kissell made her study in 1910-11, the Papago had been in contact with western civilization for over two hundred years, but had not been accepting enough of that culture to displace the native culture. It was not until around 1917, when the Papago came under government supervision, that the traits of western civilization present in Papago society today were accepted in the majority of villages. Because Kissell described basketry that was apparently unaffected by white contacts, and because the only available descriptions of basketry prior to her report fit into groups she described[2], it seems safe to regard the Papago basketry in Kissell's report as very near the aboriginal form. On the other hand, the Indians now living on the Pima Reservation had been influenced by western civilization so much earlier[3] that Kissell's and Russell's[4] reports cannot be considered an authentic picture of aboriginal basketry for that group. Neither is there any adequate basis for a comparison of

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[1]Kissell, 1916

[2]Lumholtz,1909; Bartlett, 1854; F.S.H., and A.P.

[3]In 1869 J. Ross Browne wrote: "I was gratified at all events to know that the Pimos were rapidly becoming civilized people" p.128. and pp. 109-111.

[4]Russell, 1904-5

modern and aboriginal basketry of the Papago now living south of the Mexican border. Although there has been a great deal of traveling back and forth, the culture of the Mexican Papago broke up during the Mexican wars[1] and today it is little known ethnologically.

Some aspects of aboriginal basketry were obtained from Ruth Underhill's report on Papago social organization as it existed in the memory of her informants.[2] Other aboriginal aspects were obtained from an examination of old baskets that are still in use and from the informants listed in the preface.

Whether these sources are truly representative of aboriginal conditions, or merely of a period in which the strength of white influence has not been determined, cannot be said. Whichever they are, they do offer a basis for determining what changes have taken place in a trait such as basketry under white contacts, and more specifically, under reservation conditions.

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[1]Underhill, 1939, p. 202

[2]Underhill, 1939

I - THE PLACE OF BASKETRY IN PAPAGO CULTURE

> "The significance of culture consists in the relation between its elements, for the simplest as well as the most elaborate artifact is defined by its function, the part which it plays within a system of human activities; it is defined by the ideas which are connected with it and by the values which surround it...To define the cultural identity of an artifact is possible only by placing it within the cultural context of an institution, by showing how it functions culturally" [1]

In recognition of the value of this point of view in a study involving acculturation[2] the place of basketry in relation to the rest of Papago culture will be determined.

BASKETRY IN RELATION TO THE ENVIRONMENT

One of the most basic relationships is between basketry and the environment of Papagueria, especially since the Papago have apparently inhabited their present territory for several hundred years. (fig.1) According to their legends, the Papago have occupied Papagueria since their migration from the place of origin. Unfortunately there is not yet archaeological proof (or disproof) that the ancient inhabitants of the area were the ancestors of the modern Papago. The earliest written record of the Papago is found in the diary of Father Eusebio Francisco Kino, who visited the area between 1687 and 1711. He found the Papago in the same territory and in many of the same villages as today.[3]

---

[1] Malinowski, 1931, p.629

[2] "Acculturation comprehends those phenomena which result when individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups." (Redfield, Linton, and Herskovits, 1935, p.149)

[3] Bolton, 1919

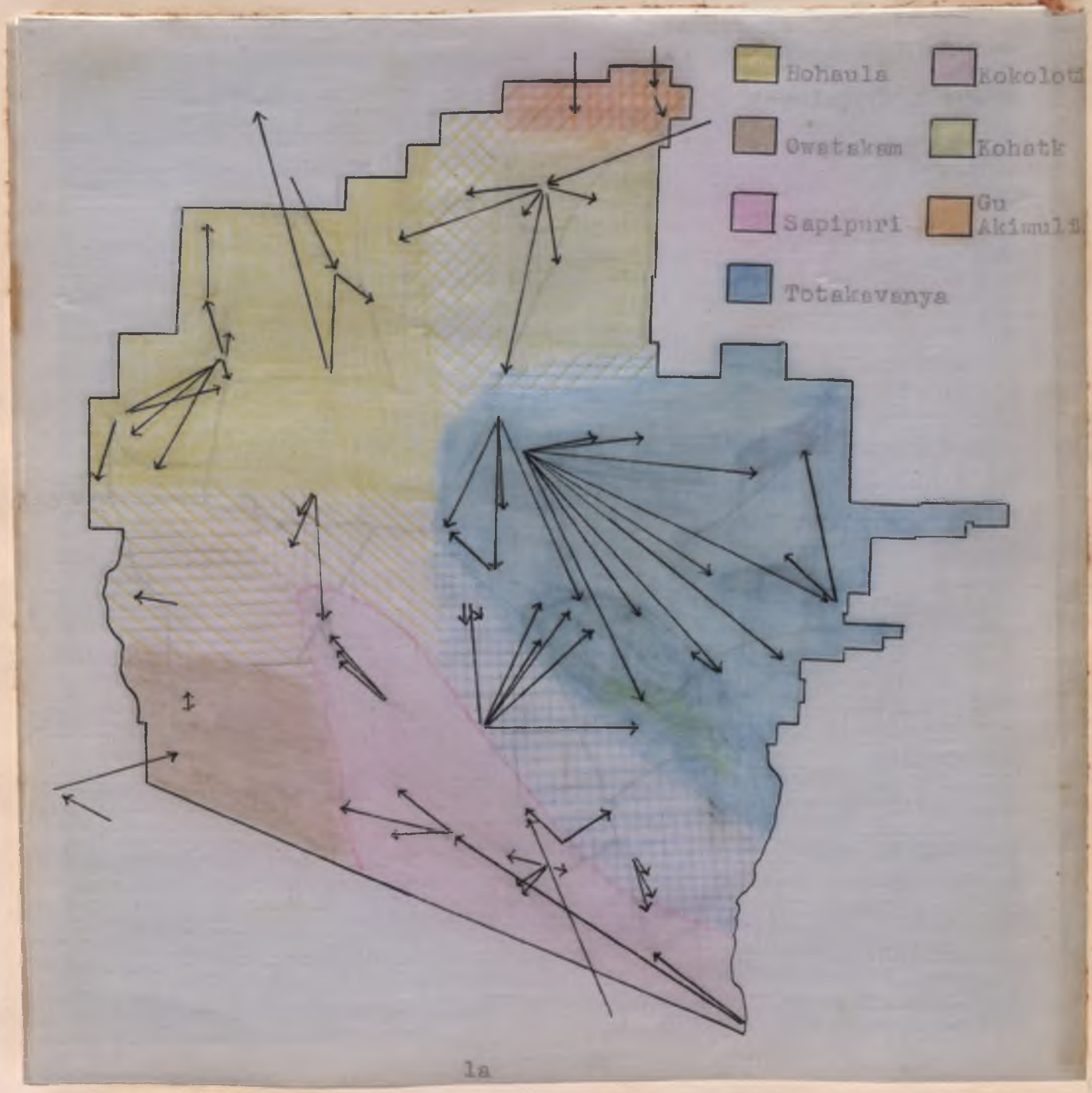

Figure 1

a- Dialect groups and village migrations (see Appendix II).
b- Improved roads and trading posts where baskets are sold frequently.

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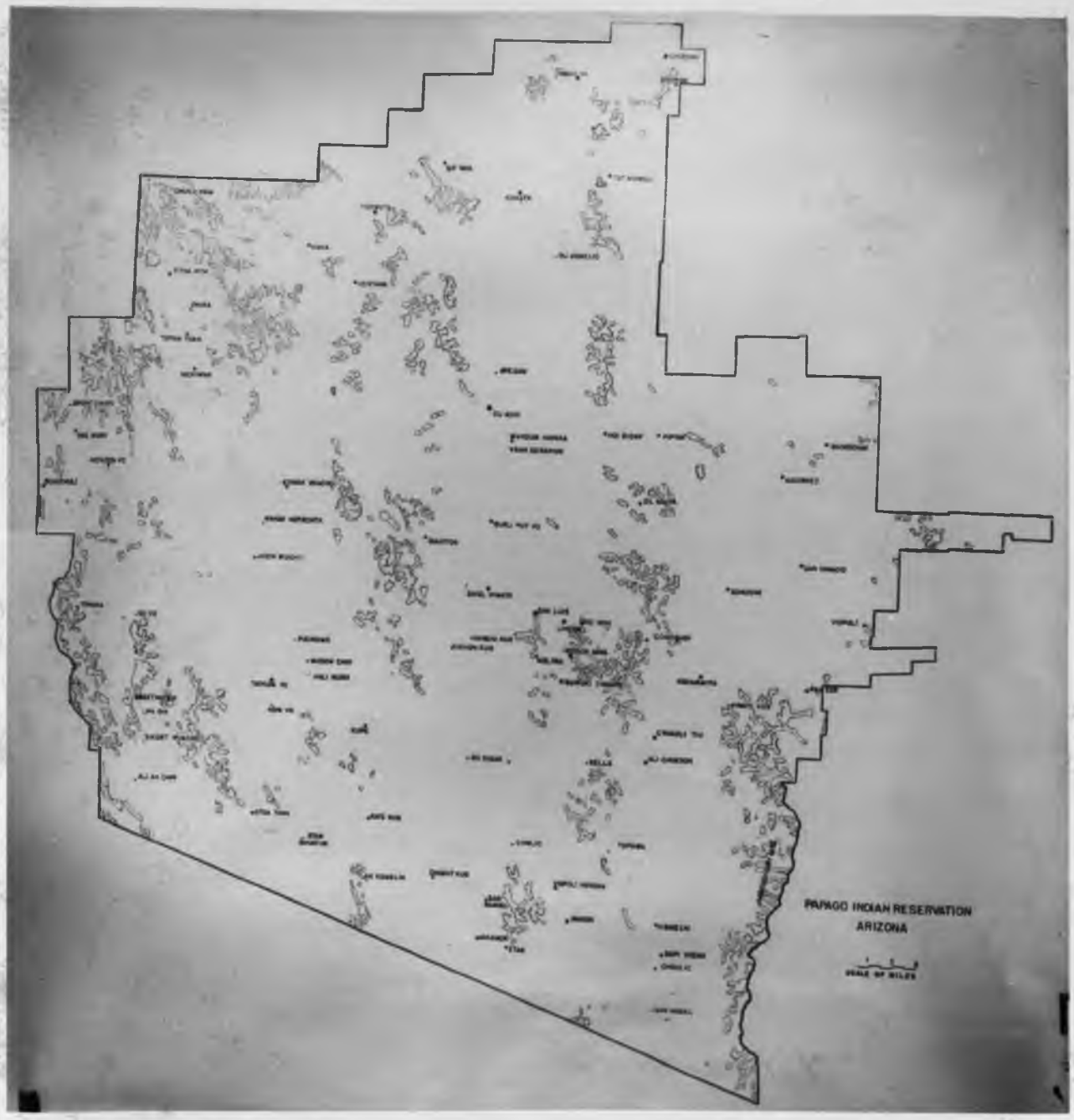

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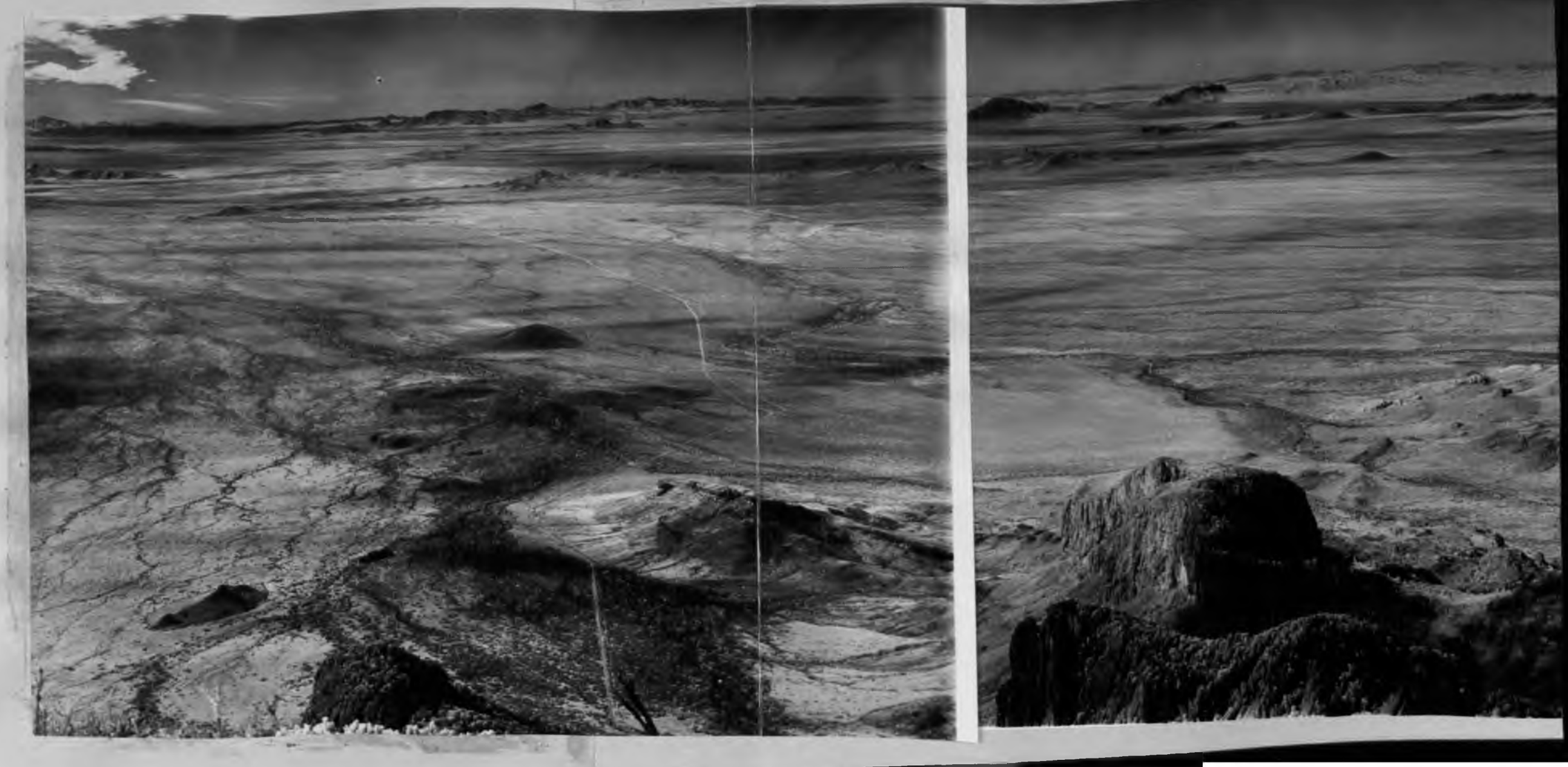

Figure 2

Topography of the southern Papago Reservation

Photograph taken from Baboquivari Peak by Faurest Davis

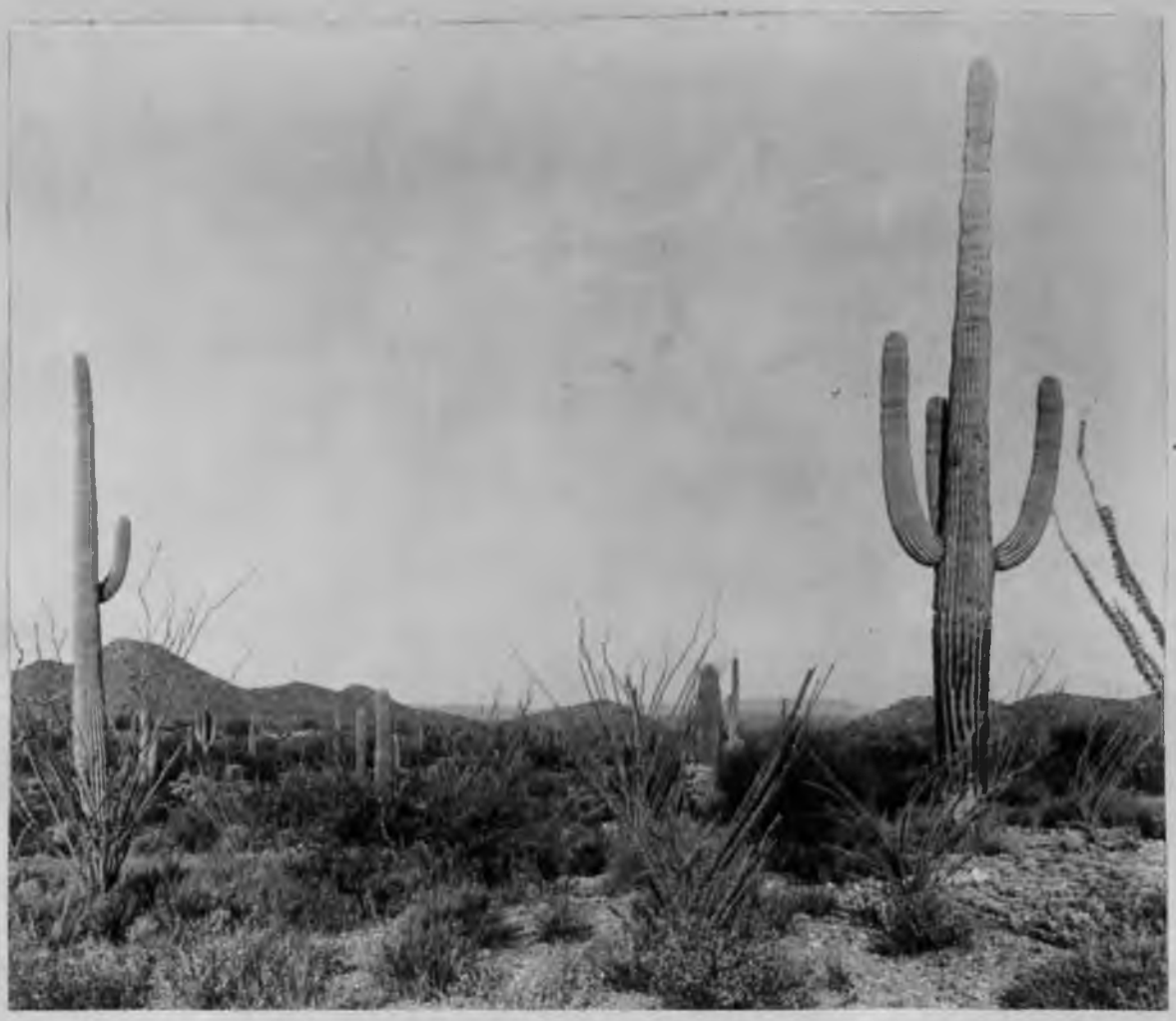

Figure 3

Landscape of the Papago Reservation

This territory in which the Papago have lived for at least four hundred years extends from the Gila River south to the Altar Valley, Sonora, and from the Growler Mountains east to the Coyote and Baboquivari Mountains. To the casual traveler it is a scorched, barren and uninhabitable land. (Fig. 2 and 3) While to a scientist:

> "The Papago country which is part of the desert region of Arizona is included in the Basin and Range province of the United States. Broad alluvium-floored valleys bordered by relatively small steep-sided mountains are characteristic of the region. A warm climate almost constant sunshine, and very little rain set the area apart as a land of small population, both animal and human. The vegetation is, however, remarkable in the great number of trees, bushes and large cacti, which give an appearance of verdant fertility to an almost waterless land".[1]

And to the Indian it is a land in which a livelihood can be obtained by adjustment and hard work.

The textile industry was just one of many culture traits that the Papago had adjusted to their environment. By ingenious and intricate processes of preparing native plants and by trading for splints with their neighbors in the Santa Cruz and Gila Valleys, the Papago secured materials suitable for plaiting, coiling, crude twining, and netting. Details of this adjustment have been adequately discussed by Kissell,[2] Beals[3], and Castetter and Underhill[4].

---

[1]Bryan, 1925, p.1

[2]Kissell, 1916, pp. 127-140

[3]Beals, 1934, p. 21

[4]Castetter and Underhill, 1935,pp. 53-59

The environment of Papagueria today has been altered by permanent wells which the government started drilling on the Reservation in 1917, by more rapid transportation, and by general stores. These changes have not been responsible for changes in the basketry materials used, but they have been responsible for changes in methods of preparing and collecting materials. For one, women formerly went out in collecting parties for several days; today there is an increasing tendency for one or two women to go in a wagon and collect all they need in one day. For another, they used to stay in the hills to use spring water for cleaning fibres; today they return home and use well water. And third, they used to dampen martynia fibres by burying them in moist earth; now they dampen them by immersing them in water.

The plant materials used in the manufacture of baskets will be discussed in detail in the section on technics but a list is included here to show how the Papago utilized everything available.

Agave deserti Engelm - agave
Fibre used for cordage in making a keeho.

Agave Schottii Engelm - Spanish bayonet
Occasionally inner bark of roots used for red designs on modern baskets.

Cereus giganteus Engelm - sahuaro cactus
Ribs used for keeho poles and sometimes for shelves.
Ribs formerly used for twined doors, cradles, and shelves.

Chilopsis linearis (Cav.) Sweet - desert willow
Roots occasionally used for designs, especially around the village of Anegam.

Dasylirion Wheeleri Wats - sotol, spoon plant
Leaves used for plaited baskets and mats.

Fouquieria splendens Engelm - ocotillo
Kissel reported that the splints were used for the foundation of coiled baskets but no modern informants report its use.

Jatropha cardiophylla (Torr.) Muell. Arg. -"manzanita"
Bark of stems used occasionally for red designs in coiled baskets.

Larrea divaricata Cav. - creosote, "greasewood"
Leafy branches used for pseudo-coil granary baskets.

Martynia parviflora Wooton - devil's claw (most commonly used)

Martynia arenaria Engelm - devil's claw (used occasionally)
Pods used for black sewing elements in aboriginal and modern coiled baskets.

Nolina microcarpa Wats. - beargrass
Leaves used for foundation of coiled baskets.

Olneya tesota Gray - ironwood tree
Young shoots used occasionally for weft of coiled baskets.

Populus Fremontii Wats. cottonwood tree
Young shoots used for weft of a few coiled baskets.

Prosopis velutina Wooton - mesquite tree
Bark strips formerly used for weft of coiled granaries and for cradle loops.

Salix Gooddingii Ball - willow tree
Young shoots used for weft of domestic coiled baskets and a few commercial coiled baskets.

Triticum vulgare L. - wheat
Stalks used for foundation of coiled granaries from Spanish times to approximately forty years ago.

Typha angustifolia L. - cat tail
Stalks used for foundation in coiled baskets, aboriginal and modern.

Yucca Arizonica McKelvey - Spanish bayonet
Root bark used for red designs on modern baskets. Formerly roots were used for tanning hides.

Yucca elata Engelm - yucca
Leaves used for white and green elements in modern coiled and plaited baskets.

BASKETRY IN RELATION TO THE ECONOMY

Within the limits which the environment sets on basic basketry technics and materials, there are many possible variations in shape, decoration, and secondary technics. In Papago basketry these possible variations are limited by use, which, in most instances, is correlated with the economy.

In aboriginal times the inhabitants of Papagueria had worked out an admirable adjustment between their environment and their economy. The Pimas, who lived along the Gila River, had a permanent water supply to which they adjusted their economy. The otherwise very similar Papago, who lived in the desert region south of the Gila River, had to obtain water from flash floods in the valleys and mountain springs. This meant that the Papago could not live the year around in the same location. During the summer they lived in valley villages, the oidak (field) where they used rain water stored in charcos, cultivated corn, beans, and pumpkins, and gathered plants that sprang up after the rains. During the winter they lived in hill villages, the vaya (well), where they secured water from springs, hunted and gathered wild food products, and went on trading expeditions. Then for a short time in the early summer they camped in the hills where they gathered sahuaro fruit which was made into syrup and wine.

With such a semi-nomadic life it is natural that the Papago's household utensils were halfway between the heavy equipment used by sedentary peoples and the light, unbreak-

able utensils used by nomadic peoples. They used some pottery, wood, and stone, some deer, rabbit and fox skin [1] but most of their containers were of basketry. For use in nearly all of their household activities they had developed suitable basket types; for gathering wild food stuffs and wood the women used a netted carrying device, the keeho; for parching wild seeds and corn they used a tray-shaped coiled basket made of fire-resistant devil's claw; for drying fruits, winnowing seeds, catching flour as it came off the metate (Fig. 4), etc., they used a bowl-shaped coiled basket; for making wine they used a deep hemispherical coiled basket; for storing water they sometimes used a pitch-covered olla-shaped coiled basket; for storing grain and corn they used a squarish plaited basket; for sleeping and eating they used plaited mats. In fact, the Papago had developed a type of basketry container for almost every purpose.

Since baskets were so important a household article, their manufacture was a regular duty of every woman, that is, basket making had a definite place in the division of economic labor.

The Papago had probably been following their agriculture-hunting-gathering economy since about 1000 A.D..[2] This aboriginal economy was supplemented by wheat, fruit, vegetables, cattle, and horses, which the Spanish missionaries intro-

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[1] Castetter and Underhill, 1935, p.50

[2] Spicer, 1941, p.22

a

b

Figure 4

Domestic baskets in use around 1915

duced around 1690. But it was not until the end of the nineteenth century that the aboriginal form of economy began to change from the native subsistence and barter economy to a money economy. This shift, which is one of the commonest results of contact with western civilization, can be attributed here to a need for money in order to obtain the manufactured articles they accepted into their culture, complemented by an opportunity to earn wages.

Among the Papago the principal factor in the acceptance of Anglo-American articles was a recognition of their greater utility. Most universally recognized was the greater efficiency of metal utensils over basketry and pottery utensils, woven fabrics over hides and hand-loomed cotton, milled wheat flour over hand-ground corn flour, and planed wood doors over sahuaro rib doors. But other needs for purchased articles resulted from the acceptance of some items presented by missionaries, doctors, teachers, and traders. In these cases the acceptance cannot be attributed to greater utility. The missionaries fostered several material needs through the introduction of rites whose fulfillment required the purchase of rosaries, new clothes for baptisms, Christmas presents, flowers for graves, etc. The missionaries are also responsible for the adoption of "modest"clothes, which necessitated the purchase of shoes, stockings, levis, shirts, dresses, and eventually sewing machines. The field nurses are credited with bringing about acceptance of a blanket hammock to replace the baby's cradle.

The boarding and day schools have played a very important role in fostering the desire for white man's articles. At school, children wear shoes, eat off of oil-cloth covered tables, and eat such foods as canned peaches and bakery pies. When the children return home, many of them want to continue having these same items. Other needs for money have apparently come from a desire for articles of personal adornment displayed in stores or seen on white people. For example, women's ornament is shifting from simple tattooed lines to costume jewelry, cosmetics, nail polish, bright handkerchiefs, and even permanent waves.

Hand-in-hand with the need for money went the opportunity for obtaining money. The Papago worked for money whenever they needed a specific item. If it were a wagon, a plow, or any man's utensil, it was the man's duty to obtain the money; if it were a household article or a dress the woman had to obtain the money. A very few attempted to work for steady incomes. The women earned money as they needed it from the sale of handicrafts, and the men from the sale of wood, handicrafts, or a short period of wage work in the mines or the wheat fields.

The Papago continued to earn money whenever they needed it from whatever source they were able until 1933 when the government established several Civilian Conservation Corp projects on the Reservation for the purpose of giving the "unemployed" Indians wage work and steady incomes. At about this same time other Papagos were making the adjustment to

a steady income in the cattle business, also with the government's assistance. Despite this increase in steady jobs, there are still many households in which the idea of obtaining money for specific items persists, so the Papago are just on the threshold of a complete money economy.

When the Papago started to trade with white men, the basket began to lose its place as a household utensil, for the women were replacing their baskets with metal pots and pans and even wooden boxes. This substitution meant that many of the aboriginal basket forms were no longer needed and consequently became extinct. But the art of basket-making did not die out as many writers in the early part of the century predicted. In 1909 Lumholtz wrote:"... even basketwork...is falling into decay".[1] Instead, women learned that one way to obtain money was by making baskets to sell.

It is a recent development for the women to make baskets exclusively to sell, but it is an aboriginal trait for them to use household baskets as articles of trade. So the commercialization of basket-making as one way to cope with the rising needs for money has developed from a trait already existing in the culture in a rudimentary form. Some of the indications of aboriginal basket trading are given by

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[1] Lumholtz, 1909, p. 28.

Underhill[1] and Russell.[2]

> "When I was a little boy my mother traded baskets to the Mexicans in Tucson and Magdalena." (J.N.)

This last statement may or may not mean that baskets were among the articles William Bell saw when he ambiguously stated that "The Papago were doing a prosperous trade with the Mexicans" in Magdalena in 1869.[3]

When the Papago are asked how long they have been making baskets to sell the answers range from "just recently" to "long before my time". The most consistent and reasonable time given was when the miners came into Papagueria toward the end of the nineteenth century.

> "The men at Skomuck Juit mine, southwest of Santa Rosa, gave women coffee, sugar and potatoes for their baskets. In this way the miners got good collections and when they went into Tucson they found people were willing to buy the baskets, so they did more trading with the women and began to sell the baskets in Tucson right along . A few years later trading posts were built at Quijotoa, Sells, and Brownell's. In all these posts women brought baskets to exchange for coffee, foodstuffs, and cloth". (A.P.)

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[1] "Plaited baskets, plaited mats, netted carrying baskets and pots were made by the elderly women...They were not such expensive articles for trade as skins and cloth.., for a mat the measure in trade was a winnowing bowl of seeds." Underhill, 1939, p. 103.

[2] "The Papagos brought saguaro fruit and syrup, agave products, prickly pear syrup, wild gourd seeds, peppers, baskets of agave leaves, sleeping mats, kiahas, fibre to make the mats, and hair cord. In exchange the Papago got from the Pimas: wheat, cotton fiber, rings of willow splints, and devil's claw" (Russell, 1904-5,pp. 93-4.

[3] Bell, 1869, p. 187

"Shortly after women took their baskets to miners they began to take a wagon load of them to Gila Bend and to Tucson to sell or trade." (A.T.)

Jose Ramon, who has a calendrical record of events on the Papago Reservation which his father started to keep in a school type note book with mnemonic pencil marks, read the following information from his record:

"Started trading baskets for coffee and white man's food in 1901.
Little girls started to go to school and women made lots of baskets to sell or trade in 1902.
One of my sisters made a big basket and sold it for $5. to a miner. Other women also started making big baskets to sell 1903-4.
Traded bowls and small baskets 1901." (J.R.)

On a whole these dates seem fairly reliable, but a little late in view of the following facts obtained about early commercial baskets:

In 1908 a Papago woman carried her baskets from door to door in Tucson to get enough money to go to a circus. (F.Shreve) (Fig.5-c)

According to Godfry Sykes, in 1908 Menager's Store in Ajo was well stocked with yucca baskets that the women brought in to exchange for food, pans, and cotton cloth. (Fig. 5-a).

Mrs. Herndon, a missionary among the Papago from 1880 to 1920, said that from about 1890 on there were a few women who made very good baskets to sell, but more who sold their household baskets when they wanted money.

About 1924 there was an increase in the number of baskets sold.

a

b

c

Figure 5

Old commercial baskets

a- Bought in 1915 at Menager's Store in Ajo (10 cm. high; 26 cm. long; 18 cm. wide).
b- Bought in 1905 at Koohatch (42 cm. high; 44 cm. maximum diameter).
c- Bought in 1908 from a Papago woman in Tucson who wanted money to go to a circus (33 cm. high; 34 cm. maximum diameter).

"One reason for this is that the cessation of small mining and other industries has thrown a large number of Indians out of work, and they have returned to pottery and basket making as affording a means of livelihood".[1]

Prior to 1938 each woman had to find a market for the baskets she wanted to sell. Most women sold their baskets to trading posts on the reservation, to curio stores in Tucson and Casa Grande, or to traveling curio dealers, and some women took their baskets to Mrs. Miller in Gu Achi to trade for sewing materials. Today trading posts and traveling curio dealers still buy baskets, but the great majority of baskets are handled through the Papago Arts and Crafts Board. Women sell directly to the Board and the Board distributes to dealers and collectors throughout the county.

The history of the Board is important in the recent development of commercial basketry because at least three hundred basket makers are contacted by the Board and because the Board is making many suggestions in regard to technics. In 1937 the Office of Indian Affairs in the Department of the Interior set up the Indian Arts and Crafts Board for the purpose of promoting useful arts of the American Indians. The objectives of this board as it was set up were: 1-to supply really fine collectors' pieces, 2-to supply tourist trade, 3-to give the American people an appreciation of the artistry of the American Indians, and 4-to supply the Indians with money. To start their work,

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[1]A Tucson newspaper, 1924

the Washington office established a local Arts and Crafts Board on several Indian Reservations, including the Papago. In the fall of 1938 Mrs. Juan Xavier started the Board on the Papago Reservation. When she first began, her objective was to get baskets and other handicrafts to sell at the San Francisco Fair of 1939-40, and later she obtained other markets. As soon as she found that she could get more markets than baskets, the head of the Indian Arts and Crafts Board, René d'Harnoncourt, had a meeting with the Papago Tribal Council. The Council realized that the continuance of a local Arts and Crafts Board would help make the Papago self-sufficient, so they appropriated $3000 as a revolving fund for the purchase of baskets and other handicraft. This fund was obtained from a ten percent income tax put on all wage-earning Papagos for use in tribal benefits. For an assistant in establishing this board, Mrs. Xavier chose Anita Pablo, a very well educated Papago woman. In 1938-9 the two women drove over the Reservation buying every available art piece. By the following year they had a large enough stock to be more discriminating in the workmanship of the pieces they bought. At this time the objectives of the Board were to find Papago craftsmen who could make museum pieces, to find markets for tourist pieces, and to improve the workmanship of the baskets. Then in 1940 Alden W. Jones took over the administrative work of the board and Anita Pablo, as treasurer

and later manager of the Board, continued to travel from village to village encouraging the women to make good baskets and buying the baskets they made.

Today the Papago Board is almost completely separate from the government board that established it. In 1941-2 they received many more orders for baskets than they could fill, and the turn-over was so rapid that they will soon clear the initial cost of establishment and become completely self-supporting.

BASKETRY IN RELATION TO THE SOCIAL ORGANIZATION

The relationships of basketry to other aspects of Papago culture are not as obvious as the relationship to environment and economy. Nevertheless, basketry has a place in other aspects of Papago culture, such as social organization.

In order to understand the relationship between basketry and social organization which is to be developed in the discussion on technics a brief summary of Papago social organization is given here. This discussion is based almost entirely on Dr. Underhill's study.[1]

The only large units in Papago society were two patrilineal moieties which apparently functioned as ceremonial units, and about six sibs which functioned as social and ceremonial units. Today almost all traces of moieties and sibs are forgotten. The most important social unit in Papago society was the extended bilateral family, theoreti-

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[1]Underhill, 1939

cally including all relatives to the third cousin, or great-great grandparent class, but actually including only those relatives who lived near-by. Each household within the kinship group consisted of the paternal grandparents, the unmarried daughters, the sons and their wives and their children. In most respects, the family organization has retained its importance, but with the acculturation influence of western civilization the grandparent's importance has been transferred to the young money earners.

When the life cycle of a new member of the family began, the mother was segregated with her baby for about a month and then underwent a purifying ceremony when the child received its first name. At least on the southern part of the Reservation, childbirth now follows the pattern set by field nurses and the aboriginal ceremony is no longer observed.

The child was brought up in the home where it followed the occupation of its sex quite early. Young girls were instructed by their mothers and paternal aunts, the latter acting as sort of "godmothers". Today the children attend schools on an average of three years, i.e., just long enough to learn English. So for most children the home pattern is not greatly disrupted.

At puberty the girls were secluded in a special hut where they were subject to numerous taboos and received further instruction from their senior paternal aunt. It was

during their puberty seclusion that many of the girls learned basket making, or improved their technics, for each girl was expected to make a basket at this time. One example was found in this study of a girl who had learned how to make really fine baskets during her seclusion (D.C.); however, most of the girls have omitted this practice. The boys underwent no special ceremony at puberty, but in their later teens they underwent physical ordeals to induce the dreams in which they obtained their guardian spirits.

Marriage for the girls was in the middle teens, and for the boys in the late teens or early twenties. Marriage regulations were bilateral, and the girl almost always married outside her own village to prevent marrying a close relative. In addition to relationships, the sororate, junior levirate, and choice determined marriages. After marriage there was a short period of matrilocal residence, followed by permanent patrilocal residence. Except for fewer cases of polygyny, the marriage pattern has changed very little for the majority of Papago.

The Papago's informal social system, as briefly outlined here, was held together by ties of family and community duty. One of the most important ties was a system of gift-exchange between related peoples living close together. Gift-exchange was a highly developed reciprocal system, whereby each family in the kinship unit shared food and other possessions with their relatives. In gift-exchange the basket

functioned both as an item of exchange and as a measuring cup for such gifts as corn. In the latter the recipient would notice to what horizontal line in the basket his gift came. Then in reciprocating he would fill the basket to at least the same line. When a basket constituted an actual gift, the basket was of a finer weave than the ordinary household baskets. Such baskets were kept as ornaments or used at fiestas and were not subjected to domestic use. (A.C.P.) Another use for baskets was in games, when a marker was put in the spaces of a basket design to count the score.[1]

Other ways in which basketry is related to the social organization are so closely bound up with economic and religious considerations that they are better discussed in a separate section on the socio-economic aspects of basketry.

The only changes in social organization directly affecting basketry are the break-down of gift-exchange and the discontinuance of the girl's puberty seclusion. Both of these changes are reducing the uses of domestic baskets.

BASKETRY IN RELATION TO THE POLITICAL ORGANIZATION

A summary of Papago political organization in the past and in the present, brings out a few indirect relationships with basketry; no direct relationships are descernible until the recent establishment of the Papago Arts and Crafts Board.

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[1]Underhill, 1939, p. 149

The only aboriginal political organization was in the village. Some of the small villages around a larger one were administered with the large village. Otherwise, each village was an independent unit governed by a council of mature men and one leader. (The Papago name for the village leader, _junikita multchutum_, is literally translated "keeper of the smoke", but the modern Papago admits that this sounds silly, and that "leader" is the most accurate translation).

The simple aboriginal political set-up was disrupted on three occasions. One disruption occurred when the Spaniards attempted to divide the tribe into seven districts, putting each district under a sub-chief, or governor, and the sub-chiefs under a head chief in Gu Achi.[1] Another disruption took place during the Apache raids when the Papago banded together in temporary defense villages. This was the first time the Papago had had a real need for inter-village cooperation and concentration of population. The third disruption occurred during the time that Arizona was a territory. During this period the Papago were assimilating American culture at varying rates of speed and with varying attitudes. The result was that men in any one council disagreed so violently on policies that the village organization was

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[1]Peter Blaine, Arizona Daily Star, 11/23/41

chaotic.[1] So when the United States Government established the Reservation in 1917, the Papago political set-up was already out of its traditional pattern.

When Papagueria was set aside as a Reservation, the government's first moves were to establish schools, a hospital, and extension service; to encourage missionaries, and to furnish the Indians with horses, wagons, and tools.

The political organization as it functions today started in 1934 when the Papago accepted the Wheeler-Howard, or Indian Reorganization, Act. Under this act a constitution was drawn up and adopted by the tribe in December, 1936. In compliance with this constitution, the Papago are now organized in the following way:

> Each village is organized in the old way under a council of mature men. The village council settles village problems.
>
> The leaders of the village councils are organized into district councils. There are eleven district councils which settle inter-village and intra-district problems.
>
> Each district elects two representatives to the Tribal Council, which is the governing body of the Papago, San Xavier, and Gila Bend Reservations.
>
> The Tribal Council, in turn, has established several boards to supervise the activities of the tribe that are not in the jurisdiction of villages or districts. These boards are:

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[1]Underhill, 1940

The Tribal Loan Board, which makes loans to Indians for business ventures and education.

The Tribal Court, which takes care of law and order among the Papago.

The Papago Fair and Rodeo Board, which is in charge of the annual fair and rodeo.

The Papago Arts and Crafts Board

This system has not been in effect long enough for the weak spots to develop, but so far it seems to be functioning very efficiently. Jones Narcho Jr., Secretary of the Tribal Council, stated the purpose of this political organization very well:

> "This organization of the Papago Council made it possible to facilitate and strengthen the handling of many problems which it was seen would have to be solved by this group as the Papago ascended the steps of civilization." [1]

The basket had no place in the political organization until the Arts and Crafts Board was taken over by the Tribal Council. Through this Board, basketry has been recognized as a profitable, money-making craft. So the Board, although part of the political set-up, is actually a result of the economic changes previously discussed. There are also several indirect effects upon basketry, such as the government sale of wagons, which replaced the old burden basket, or keeho, and the government prohibition of trips to the Gulf of California for salt, which ended the need for salt baskets.

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[1]Arizona Daily Star, Nov. 23,1941

IN RELATION TO THE RELIGIOUS ORGANIZATION

The function of basketry in religious ceremonies will be shown by a summary of Papago religious organization; the role of religious ideas in basket making will be discussed in Chapter III.

The aboriginal religious organization, as well as the political organization, was headed by the village leader, the "Keeper of the Smoke," and the village council. Other religious leaders were the town crier, who made announcements and summoned meetings, and shamans. There are also records of war, hunting, game, and song leaders.[1] The men in these positions acquired their power and luck by dreaming. Although the power which came with dreams was important for religious and even political participation, dreaming for power was not as fanatical as it was in the Plains Area.

The major religious ceremonies were associated with the economic calendar, such as: a rain ceremony which involved payment between villages;[2] the rain ceremony in July at the sahuaro fields; the songs on various nights during the summer to encourage growth of crops; the deer ceremony in the fall and the Wiikita harvest ceremony approximately every four years. There were other ceremonies

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[1]Underhill, 1939, pp.77-9

[2]Underhill, 1939, pp. 106-8

that did not follow the calendar, such as curing ceremonies, ceremonies at birth and puberty. All of these ceremonies consisted of songs, dances, and oratory.

Today the native ceremonies have been variously mixed with and altered by Christianity. Christianity is found in three forms on the reservation: the Sonora Catholic Church, which is the descendant of the Jesuit Catholicism taught by Father Kino; the Catholic Church, which is the descendant of Catholicism taught by the Franciscan missionaries; and the Presbyterian Church, which was introduced by missionaries in the latter part of the nineteenth century. Occasionally an individual is converted to Mormonism or Christian Science, but other sects have not taken hold on the Papago as a group.

If baskets had any religious significance in the past, all traces were gone before anyone took an ethnological interest in the Papago.

Today several baskets are used in ceremonies as containers, but none have ceremonial significance or specifications. (The Navaho are the only southwest Indian group in which ceremonial significance and specifications in basket making have been reported).[1] One of the containers used in ceremonial procedure is the covered rectangular plaited basket (Fig. 9 e & f) in which the medicine men keep their paraphernalia. The contents of some of these

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[1]Tschopik, 1940

baskets have been described by Underhill[1] and Kissell[2]. Another basket used as a container in ceremonies is the deep hemispherical coiled basket used for sahuaro wine in the summer rain ceremony (Fig. 16). Pottery or even a metal bucket can be used, but the Papago prefer the basket because "it keeps the wine cooler and it tastes better" (L.J.). In fact, the need for any sort of a container in ceremonies is frequently filled by a bowl-shaped basket, but the reasons for not substituting something else are logical and not ceremonial. The baskets used in ceremonies are very well made, and although they may have been made to use in ceremonies, they are put into household use during the rest of the year. Baskets have one other use in ceremonies: sometimes one is inverted and used as a drum being beaten with two sticks or the hands, and as a resonator for a rasping stick.

Frequent mention is made of baskets in myths, but again, they have no ceremonial significance. For example:

> "Je'ute Makai was creator of the earth and sky. When he made the earth he put the dirt in a basket-bowl" (F.S.H. and J.R.).
>
> "Stories about wine fiestas always mention the baskets used" (A.C.P.).
>
> "Stories always end with the expression 'that is the last coil of the basket'" (S.I.).

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[1]Underhill, 1939, pp. 71-2

[2]Kissell, 1916, pp. 170-2

"In many stories they mention a woman sitting down and making baskets". (brother-in-law of L.J.)

Very few of the people today know any legends or stories about baskets.

"The people in the north know more of the stories. The Tecolotes were the first to stop telling the old stories. Now they have forgotten the old stories and the old ways. They regret it, too." (A.C.P.)

"When I was little I went to bed instead of staying up to listen to the stories my father told. I am very sorry now." (L.J.)

The only story obtained about the origin of basketry came from Anita Thomas of Kohatk:

"Soon after the people were created, Eetoy[1] told the people in different villages to make certain things. In the northern villages he gave the women some pottery and showed them how to make pottery. In Santa Rosa he gave the women some basket bowls and showed them how to coil baskets. In the south he gave them mats and showed them how to make mats and plaited baskets. For a long time people in certain villages made pottery or basketry very well and then traded to people in other villages for things they wanted. But a long time ago, the people moved around so much and married into other villages, so women in all the villages learned to make bowls and pottery. But even now the women who originally came from Santa Rosa made the good coiled baskets. This is like the birds. When Eetoy made the birds he showed each one how to make a nest and then he sent them to different places to live. Some birds make very good nests, just like the women from Santa Rosa make very good baskets."

The following story of the origin of baskets was obtained from a Pima Indian, Manuel Lowe:

"In the old days when the people made their living in the old way they would gather cholla. One day a brother and sister went out to get some cholla. When they had gathered it and were sitting near-by waiting for it to roast, Eetoy[2] sent a young man down to the

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[1]Papago culture hero

[2](Both Manuel Lowe and the interpreter, Juan Xavier, felt that the Pima word Siyh'hu, is the same as the Papago Eetoy)

place where the children were sitting. He stood at a distance and shot an arrow into the ground where they had buried the cholla to roast. The Corn Man then went up to the children and told them their cholla was cooked, to unbury it. They unburied it and there instead of the cholla they found an ear of roasted corn and some squash. The Corn Man then told the brother and sister to go home and eat it.

"When they got home the clouds and a great wind came up on top of a mountain and it began to spread over the village in the shape of a field. It rained and wet the ground. Then corn, squash, and beans began to grow. The people gathered these. Then they built a mat enclosure, to put the things they had gathered in. After they built it they saw the young man standing in it. He made a mark on the ground inside the enclosure, out of this mark came a grinding stone; he made a second mark, out of this mark came a metate; he made a third mark, out of it came a large bowl-shaped basket; then he made a fourth mark out of which came a parching tray."

The first part of this story is known by the Papago as the origin of corn myth, but none of the men or women asked had ever heard the part about the metates and baskets.

Unfortunately there is no way of knowing how close an association there may have been in the past between the use and manufacture of baskets and religion, because for many years baskets have been completely secular. Miss Kissell was unable to obtain any information on religious associations with basketry, and the old informants can throw no light on the subject. Just because secularization is a common result of acculturation, it should not be assumed that the basket formerly had a religious connotation.

IN RELATION TO THE LANGUAGE

Dialect Groups

The Papago speak an agglutinative, polysynthetic

language which belongs to the Piman branch of the Sonoran stock of the Uto-Aztecan linguistic family.

The aspects of language that are significant in the study of Papago basketry are: limitations set on basketry by vocabulary, correlations between the Papago dialectic variations and basketry technics, and the actual words in the language pertaining to basketry.

No limitations set on basketry by vocabulary were discernible. No counting is used in basketmaking, but this cannot be interpreted as a language limitation for although the aboriginal Papago counted only to ten, the Spanish counting system has been in use for several hundred years.

The correlation between dialectic and technical variations is of particular interest because there are seven groups within the Piman branch that have distinct, but mutually intelligible, dialects. (Fig. 1a)

The history of these dialect groups begins with Father Kino, who recognized the following groups or "tribes" in Pimeria Alta:

1-The Pimas
Living along the Magdalena river and the upper Altar river and into the southern part of what is now Chukakut District of the Papago Reservation.

2-The Sobas
Living to the west of the Pimas on the lower Altar Valley north to Sonoita and south to the Gulf of California.

3-The Sobaipuris
Living north of the Pimas along the upper Santa Cruz and San Pedro valleys.

4-The Kohatks
Living north of the Sobaipuris along the Santa Cruz River and on the lower part of the Santa Rosa wash.
5-The Gilenos
Living north of the Kohatk, along the Gila River
6-The Papago
Living west of the Sobaipuri, south of the Kohatk, and north of the Pima.

Kino also mentioned spending one night at a village near the site of old Hickiwan on a journey from the Pima country to Gila Bend, but he did not mention the "tribal" affiliation of these people living west of the Papago and Kohatk.[1]

Enough is known about these six groups in the intervening years to make it possible to identify them with the seven dialectic groups now recognized by the Papagos. Mr. Alden W. Jones, has traced the history of the modern divisions back to Father Kino's "tribes." The history of the seven groups as worked out by Mr. Jones from historical records and from Papago informants is as follows:

1-The group referred to by Kino as the Pimas lived in the Magdalena and Altar Valleys until Mexicans settled the area and pushed the Indians northwest into the territory now inhabited by the Kokoloti dialect group.

2-The "Sobas" moved from their location in the lower Altar Valley in 1904 when the Mexican government sent an army into the region. About 100 of the Indians went south to Caborca, about fifty went north to the present village of Cowlic, and the rest settled in Sonoita. Then during the Mexican Revolution many of those who had settled in Sonoita moved into the village of Ali Ak Chin. Now the Papagos living in Cowlic, Quitovac, Sonora, in the Pinacates, south of Caborca, and a few west of Ajo all speak the same dialect - Ow̃atakam.[2]

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[1] Bolton, 1936

[2] "Sand Dune People"

3-Even in Kino's time the Apaches were forcing the Sobaipuris out of the San Pedro valley. Then after the Jesuits left the Santa Cruz, the Apaches forced them out of that valley too. The Sobaipuris took refuge from the Apaches by moving down the Santa Cruz valley, and eventually into the Gila Valley. Today on the Gila River Reservation there is a group called the Sovaina, which is translated mottled or pinto, the same translation Kino gave for Sobaipuri. This Sovaina group seems to be composed of the descendants of the Sobaipuris.

4-The Kohatks that were living northeast of the Picacho Peaks were fighting a losing battle with the Apaches and were being pressed by the Sobaipuris coming up the Santa Cruz River, so they took refuge with their relatives in the upper Santa Rosa Valley. The group that left the Picacho region settled in the town of Sif Oidak, which is recognized as the parent village for the present Kohatk population on the Reservation (see Appendix II).

5-There is no indication that the "Gilanios" have moved since Kino's time. From all indications they were the same group that is now living on the Pima Reservation, speaking the Gu Shuatuk dialect.

6-The "Papagos" have not moved very much either, for they were bounded on the north by the Kohatk and on the south by the Kokoloti. Only one known migration has been made-the group that moved out to inhabit the San Xavier Mission region when it was taken over by the Franciscans in 1769. Today the people living between the Kohatk and Kokoloti and the group at the San Xavier Reservation speak the Totokavanya dialect.

7-The seventh group recognized by Mr. Jones and his Papago informants was not mentioned by Kino. The present location of this group is west of the Totakavanya, north of the Owatakam, and south of the Gu Shuatuk. All of the tribes to the west were accounted for by Kino, so it is very probable that they were in the area at Kino's time. Further substantiation of the fact that this group has been in the same area, and was merely overlooked by Kino, is the fact that Kino himself spent only one night in that section of Pimeria Alta. The people in this area today speak the Hohohula dialect.

"This accounts for the groups mentioned by Kino, for the present-day dialect groups, and takes into account all the logical results of known historical movements". (A.W.J.)

As the natural result of the proximity of these seven dialect groups there are several villages in which a mixture of the words from the neighboring groups is spoken. Some of these, such as Anegam, are apparently recent mixtures, while others, such as the villages between Totokavanya and Kokoloti, are older mixtures.

In each of these groups there is a feeling of solidarity and distinction from the other six groups. This feeling was brought out very strongly in 1934 when the Papago were asked by the government to divide the Reservation into administrative units. In doing this, they tried to keep the related villages together, and in each case the units chosen by the Papago followed the linguistic units. It is not the problem in this paper to determine which is cause and which is effect - the feeling of solidarity or dialectic variations (it is my unsubstantiated opinion, that the former is causal); it is the problem in this paper to detect any correlations between these groups and basketry. The few of these correlations that were discernible will be brought out in the discussion on technics. The only very noticeable differences are that none of the Owatakam and very few of the Kokoloti make coiled basketry, but they do make more plaited basketry than the other groups.

Basketry Terms

Since no complete Papago vocabulary has been published, some of the words and phrases concerning basketry are included here. The following words are spelled according to a system devised by W. Kurath. His system was worked out for popular use, especially for the Papago themselves.

Papago	English equivalent
a	father
aa	ah
ai	my
au	haul
ay	may
e	merry
ee	machine
i	pin
o	old
ö	as in the New England pronunciation of bird
oy	toy
u	put
uw	noon

All consonants are the same as the English equivalent except:

p,t,k	unaspirated; frequently indistinguishable from b, d, g.
rr	slightly rolled
hw	white
'	a gluttal stop: a nice man; an' ice man

The following list was compiled from Totokavanya informants unless otherwise stated.

Plants used in baskets

Agave	a'olta
Beargrass	uwtevak
	mau - Koloti
Cattail	uwta'hak

Martynia	eehuk - all dialect groups
Root of Spanish bayonet	hoy tatk
Spanish bayonet	hoy
Sotol	hovich
Willow	chi'ulee
Yucca	tak o wee
Unbleached yucca leaves	s'chyutak tak o wee

Basketry Articles

Basket (coiled)	hwa - Totakavanya and Kohatk hwu'a - Koloti 'ua - Owatakam o'ha - Hohohula hwa (said very rapidly)-Pima
Baskets	hwohwa
Bowl-shaped willow basket	matarrk hwa
Burden basket	Keeh(w)o
Cradle	wole kaut
Head ring	ha'ka
Little basket	ali hwa
Oval basket	shapatk hwa
Mat	main
Medicine basket	makai hwa shaum --literally - storage basket of the medicine man
Plaque	komatk hwa --literally-flat basket
Plaited basket	hash'ata
Strainer	
plaited	hash'ata
twined	si'isheeta kaut - Kohatk
Storage basket	hwa shaum
Tumpline	kiki hau
Wine basket	ko hwa --literally - big basket, but Papagos refer to it in English as a "wine basket"

Parts of a basket

Bottom of a basket	at hwa batak
Fibre in keeho	weechinau
Foundation	homseekatch (or material used)
Handle	kiatk
Handled basket	kiatkam hwa
Lid	maishoat'k

Lidded basket	maishpat'kam hwa
Over-stitching	
Three-strand	he'et paka - literally-braid
One or two strand	pe hatk -literally-wind around
Start of a basket	hwa a chu'ta - literally-basket knot

Basketry Manufacture

Awl	auvich
Basket maker	hwa tak
Coiling	eevauta'eem-literally--putting it on
Crude coiling	haum'ata - Kohatk literally big coil that goes around
To hammer	shaunt ' apa
Spaced-stitch coiling	kó ish pe -Kohatk
Split-stitch coiling	bish pem, bish pe-Kohatk literally laying it in
To plait	vo'ata
	hit paka - Kohatk
To split (as yucca)	ta'ch
She always makes baskets	so'a tatak
I put on one row (of coiling)	humako an voy
I put on two rows	Kauk ana voy
Have you any baskets (for sale?)	Nam pai'ha hwoha?

Designs

Design	au'aa ha tak
Coyote track design	Pana kau'kh au'aa ha tak
Squash blossom design	tautaun sh'p au'aa ha tak
(these are the only two designs for which the women "had heard names")	
Black (used in referring to a basket that has "lots of black")	S'chuk

IN RELATION TO OTHER MATERIAL TRAITS

Whether the potsherds, artifacts, and burials left in Papagueria prior to 1540 belong to the ancestors of the modern Papagos is still an enigma. So for the history of material traits, too, the Papago history must begin with the Spanish documents. According to Spanish records

and old informants the aboriginal material traits included: dome-shaped houses of brush, sahuaro rib doors, ramadas, basketry, water, cooking and storage jars, "cheese troughs", slab metates and manos, mortars and pestles, stone scrapers, digging sticks, palm drills bows and arrows, buckskin or cotton breech cloths for men and aprons for women, fibre and skin sandals, cordage, drums, rattles, flutes, rasping sticks, etc. Basketry technics were used in the manufacture of a great many items that will be discussed separately in the section on technic.

Today the native material traits have been replaced by white man's traits in proportion to the buying power of the individual. The house of a Papago whose income is good will contain a radio, glass windows, screen doors, a stove, china dishes, American furniture, pictures, gadgets, a washing machine and a car.(Fig.7)The place of the basket in such a house is as an ornament or trinket container. As the scale of income goes down fewer of the Anglo-American luxuries will be found, and more and more of the native artifacts. (Fig.6)

IN RELATION TO THE ENTIRE PAPAGO CULTURE PATTERN

So it can be seen that Papago basketry is not just the sum of the materials and technics of manufacture - it is a culture trait deeply embedded in many culture

patterns of the Papago Indians. In aboriginal times the importance of basketry, as for nearly all culture traits, revolved around subsistence activities. It was the economy that dictated the relationship between basketry and environment, other material traits, social organization, and religious organization. As contact with western culture became stronger, Papago culture was altered by the gradual acceptance of a money economy. From the middle of the nineteenth century to the beginning of the twentieth century, the Papago culture patterns were poorly adjusted to the monetary system. Basketry was no exception, for it furnished a household utensil whose usefulness was fast disappearing. But the function of basketry, instead of dying out, changed with the economy. So, today the relationship between basketry and environment, other material traits, social organization, and political organization has altered only in ways which reflect the new economy. In other words, changes which have occurred in the function of basketry are the direct result of a shift from baskets for domestic use in a subsistence group to baskets for commercial sale in a money group.

II - TECHNOLOGICAL ASPECTS OF PAPAGO BASKETRY

In the preceding chapter the place of basketry as a trait in the Papago culture complex was discussed; in the following chapters the component traits of the basketry complex will be discussed. It has been seen that the art of basket making among the Papago was formerly practiced in the manufacture of utilitarian articles, and that the recent acculturation of western civilization has brought about many changes in the function of basketry. Now the problem is to determine the extent to which basketry technics were developed before white influence, and the extent to which changes in function have affected these technics.

TWINING

The simplest, and possibly the oldest[1] basketry technic used by the Papago was twining. Although never applied to baskets, simple wrapped or lattice twining technics were used, the former for doors and strainers, the latter for shelves, houses, and cradles.

WRAPPED TWINING

Doors

In the case of doors and strainers, the construction consisted of a series of parallel rods united by a one-strand twining of hide thongs at intervals of twenty to

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[1]Kissell, 1916, p. 140

fifty centimeters. Miss Kissell reported that the doors were made of sahuaro ribs twined into a flexible mat by three or more rows of thong binder.[1] In 1910 there were only four of these doors left in the twenty-four villages Kissell visited. Today a few of the older people (E.C. and J.N.) remember seeing them, but the majority of Indians remember only the planed wooden doors that now hang in every house on the reservation.

Strainers

Kissell gave the following description of twined strainers:

"The rods and stems of cactus ribs, arrowbush, or other stiff materials, are laid in a parallel series to form warp, and the pliable weft sinew, or skin thong, is wrapped in a single strand about them. This moves across the parallel series forward over two rods in front, between the rods, backward over one rod behind, and between the rods to the front, to again repeat the process, and so continue until the series of warp rods are all united. More of such lines are placed only close enough to stay the rods...producing a rough, pliable technic of wrapped weaving." [2]

Oval strainers of this type apparently were used only by the river Pimas, i.e., the Pima, Kohatk, and northern Papago (A.T. and L.J.). The Papago in the south used plaited strainers. Even in 1910 twined strainers were scarce and today the only one seen had

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[1]Kissell, 1916, p. 142

[2]Kissell, 1916 p. 147

been made in Kohatk "about forty years ago" (L.T.). "Many years ago these strainers were replaced by white man's things".(A.T.) Some women use a store sieve and others make strainers out of a circular piece of window screen by building two or more rows of spaced-stitch coiling around the edge. Still others use a piece of cotton cloth, pulling out alternate rows of threads in both directions, then sewing the cloth to a wire hoop.

LATTICED TWINING

The technic of manufacturing shelves approximates lattice twining, for they are made of a series of close-spaced parallel rods laid on top of, and at right angles to, a few far-spaced rods and are then twined together with a piece of hide or root, or sometimes they are merely tied together at intervals.

Storage Shelves

In the old days storage shelves were made of parallel sahuaro ribs twined to a cross board at each end with a thong, thus forming a broad flat shelf that was suspended from the house or ramada roof by thongs or cord. A hanging shelf of some sort is still found in almost every ramada. Some are made by twining sahuaro ribs, planed boards, or even pipe, with wire, string, or occasionally thong. Other shelves are more

Americanized: one family uses a set of old cushion springs; another family uses a bicycle basket, and many families use boards nailed together. Some of the uses for these shelves have been taken over by orange crates or carpentered shelves, but for their primary purpose, namely, to keep dogs and coyotes out of food while it is drying, there is no adequate substitute.

Houses

The aboriginal houses were also constructed of a crude twining. Round brush huts, formerly used for homes, but now used only for ceremonial houses, were constructed of a vertical series of close-set parallel poles crossed by a horizontal series of far-spaced rods and tied together at intervals. Wattle and daub houses are constructed of ocotillo stems set vertically and tied with roots, wire, or thongs to a few horizontal bars of sahuaro or planed wood. (Fig.6). Today an adobe brick house is preferred, (Fig.7) but there are still some dwellings and many storage houses made of wattle and daub.

Cradles

> "The crudest form of lattice wrapped weaving of the Papago and Pima is found in their cradles... It is a technic which hardly can be dignified as basketry, but shows rather an interesting transition between the simple tying process and lattice wrapped weaving." [1]

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[1] Kissell, 1916 p. 148

Figure 6

An old Papago home at Koohatch

Figure 7

Modern Papago homes at San Xavier

Cradles were made by looping a piece of mesquite root, putting sahuaro ribs across the loop and lashing them together with sinew or thongs.[1] In 1910 cradles were disappearing, and today they are completely extinct. Infants now sleep in a hammock made by looping a blanket between two cotton or hide ropes strung between two posts in the ramada. (Fig.8) The popularity of the hammock apparently resulted from the field nurses' objections to cradles. Today very few women remember the cradles.

One woman from San Miguel when asked if she had ever seen a cradle answered: "I have never seen one, but I've heard they used them down there (northern part of reservation) longer than we did because they were very backward." (L.J.) This is a typical statement, for none of the women in the extreme southern part of the reservation remember seeing cradles. One woman from Gu Oidak said that "they used them when I was little." (E.C.) In Quijotoa Jose Ramon said "In 1898 everyone was using cradles, in the following year they started to die out, only a few here and there in 1900. In Kohatk women around forty years of age remember when they used cradles, and laughingly add that you couldn't get a baby into one today.

When asked why they died out, the only reply was that "the white people came in and showed us a better way to take care of our babies." (wife of J.R.)

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[1] Kissell, 1916, Fig. 10

Figure 8

A ramada showing a baby's hammock

TWILLED PLAITING

A second basketry technic used by the Papago was plaiting, which was so much more highly developed than twining that it was used in the construction of mats, baskets, strainers, headrings, tumplines and backmats. (Fig.9) All of these plaited articles had the following features in common: diagonal twilled plaiting, 3-3 or 2-2 rhythm, decoration obtained only by varying the rhythm of the plaiting, single or double rim, sotol warp and weft.

The sotol leaves to be used for plaiting were cut from the plant one by one with a long stick, or a long-handled knife, the spines that border each leaf were scraped off, the leaves were split lengthwise and dried in the sun. Then just before using, the leaves were formerly re-dampened in moist soil, and today they are re-dampened by sprinkling with water and wrapping in a towel.

Because Kissell gave a detailed description of Papago plaiting technics[1] this section will be concerned chiefly with the changes that occurred in plaited articles in the last thirty years.

Mats

The mat was formerly an indispensable furnishing furnishing in every Papago home. Large mats averaging

1 Kissell, 1916, pp. 150-172

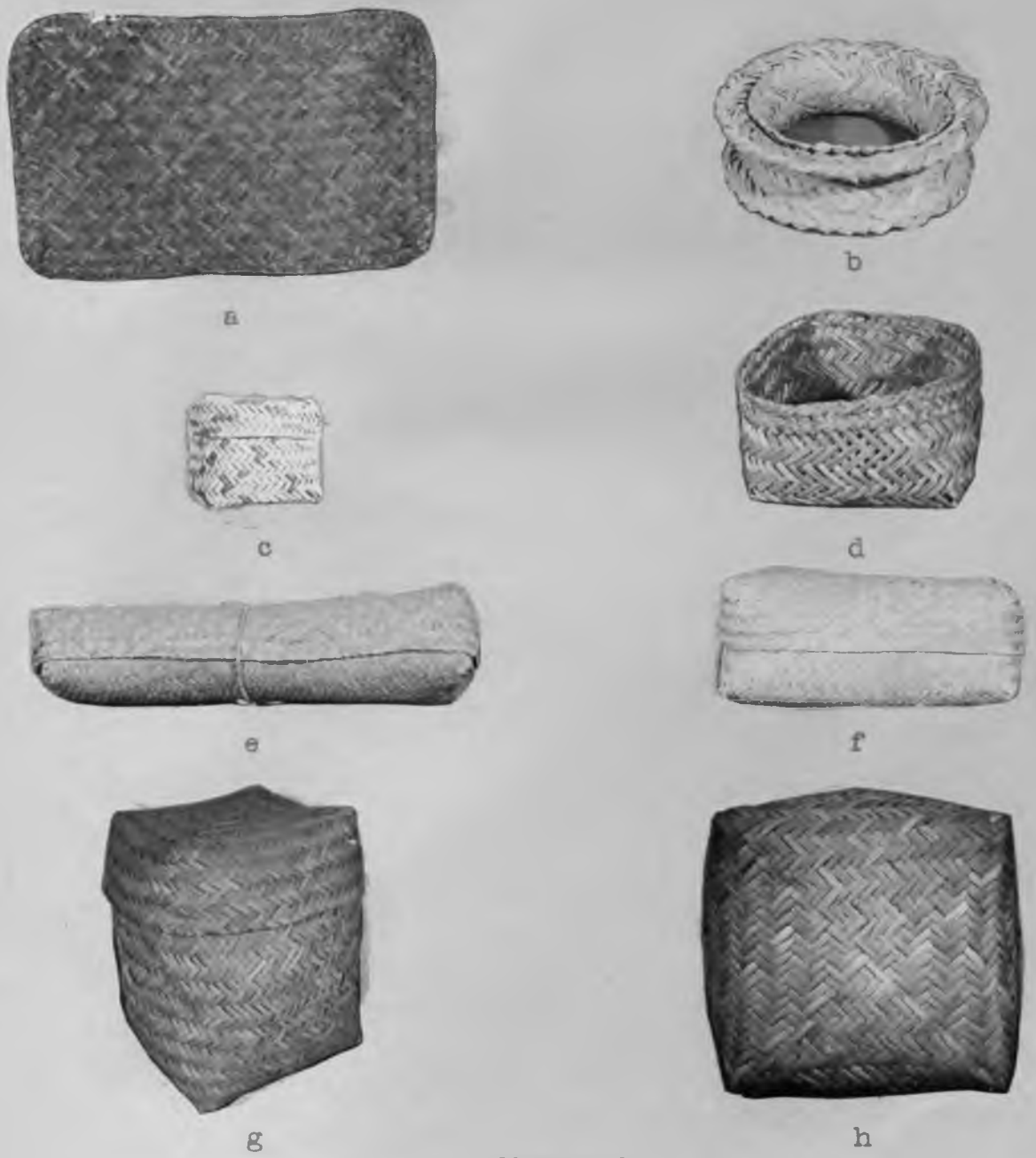

Figure 9

Plaited Articles
Bought by the Papago Arts and Crafts Board

a- Food mat (47 cm. long; 28 cm. wide)
b- Head ring (4.8 cm. high; 14.5 cm. in diameter)
c- Commercial basket (10 cm. high; 11 cm. in diameter)
d- Strainer (14 cm. high; 28 cm. in diameter)
e- Medicine basket (38 cm. long; 8 cm. high)
f- Medicine basket (28 cm. long; 12 cm. high)
g- Household basket (48 cm. high; 30 cm. in diameter)
h- Bottom of household basket shown in g.

1.8 m. by 2.4 m. were used for sleeping and smaller mats averaging .5 m by .3 m. were used for drying foodstuffs (Fig.9a). Between 1915 and 1925 the sleeping mats were replaced by bedsteads, mattresses and braided rag rugs, and the drying mats were replaced by canvas and oil cloth. The only mat in use today is in a very modernized house where it serves as a bed-side rug. This mat had been purchased from Mrs. Ramon of Fresnal who occasionally makes them for tourist trade. Her technic is the same as that described by Kissell, i.e., she starts her mat by laying out three parallel leaves diagonally to her right and weaving three leaves into them at right angles from her left. Then she adds three more on the right side and interweaves them repeating the process until the desired size is attained.

Backmats

The backmats for the burden baskets were made of narrow sotol leaves plaited in the same way as the sleeping and drying mats with two-two or three-three rhythm and a double rim (Fig.52 b). Their only unique feature was a split near one end for inserting the legs of the burden rack. The tumpline for the burden rack was also plaited. It was made with about ten strips worked back and forth from side to side, making the lengthwise edges the selvage. This band was woven to twice the desired

length and then made into a ring by interplaiting the two ends. The resultant ring was flattened, thus making a double band. A piece of cordage was then attached from each end of the strip onto the burden rack. The replacement of the keeho will be discussed in the section on knotless netting.

Headrings

Another important household article formerly made by plaiting was the ring for balancing and cushioning ollas and other head-borne loads (Fig.9b). These were made of narrow sotol strips twilled into a cylinder which was folded three times to make a thick, springy ring[1] about 5 cm. high, 14 cm. in diameter at the upper and lower edges and constircted to about 9 cm. in the middle. Women still carry loads on their heads - now groceries from the store and laundry instead of beans, peppers, cactus fruit, and ollas - but the cushion of today is made of scraps of gingham, or even red flannels, tied into a ring. This utilization of American materials for the aboriginal form is no more efficient, but it is certainly easier to make and more comfortable to use.

Baskets

Kissell also described cylindrical plaited baskets used to hold trinkets, clothing, seeds and various odds and ends[2] (Fig. 9 g & h). Although referred to as

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[1] For details of manufacture see Kissell,1916 pp 159-164

[2] ibid pp. 164-8

cylindrical, actually the base was a square, from 11 to 40 cm. across, and the sides gradually took on a cylindrical form as they approached the rim. The square base was arranged in a series of graduated squares or a vertical cross cutting through the center. Both arrangements enabled the parallel bands on the sides which result from the three-three rhythm of plaiting to be continuous with the bottom. The top border of these baskets was either outcurved with a double rim or straight with a single rim. The latter frequently had overlapping lids made in the same way as the basket with shallow sides. A few of these baskets are still in household use, but they have been almost completely replaced by suitcases, trunks, and boxes.

Strainer

The southern Papago made sieves in the same way as the cylindrical baskets, except that they had lower sides and the weave was more open (Fig.9d). Although most of its duties have been replaced by wire sieves, the plaited sieve is still used for straining sahuaro fruit "because metal changes the flavor". (L.J.)

Medicine men's baskets

The receptacle for the medicine men's paraphernalia was a rectangular plaited basket about 30 cm. long and 12 cm. wide and high with a second slightly larger basket inverted

over it for a telescoping lid (Fig.9 e & f). Kissell reported that the medicine trunks she saw were made by relatives of the medicine men, and that she was unable to determine whether or not any ceremonial conditions surrounded their construction[1]. In this connection, the modern study brought out the fact that nearly all friendships were within the family, so the manufacture of baskets by relatives was merely a part of the general social pattern and not the result of ceremonialism. This is further substantiated by the fact that today very few women plait so the medicine man will accept a basket from anyone who can make it satisfactorily. If a relative knows how, he is more apt to ask her to make his basket simply because he knows her better (A.C.P.). These same women are willing to make identical baskets for tourist trade. From present information, the medicine man's trunk is considered a container and there is no special significance attached to its manufacture.

The only indication as to how long the Papago have been using this type of container for ceremonial paraphernalia is that one was found in the post-Spanish Sweetwater cave in the western part of the Reservation. The only reply they give when asked why they still use them is that they like them.

Commercial articles

In the interval between 1910 and 1940 plaiting has

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[1]Kissell, 1916,pp.165 and 169

gone from fifty percent of the basketry production[1] to less than one percent. A part of this change is due to an increase in the actual number of baskets that are coiled today, but a large part of the change is due to a decrease in the number of baskets that are plaited. Apparently the reason plaited articles were replaced more slowly than twined articles lies in the fact that plaiting had advanced far enough beyond twining to furnish more efficient utensils. More recently another factor has speeded the replacement of plaiting - that, according to the Papago - is laziness. The only cases where this self-attributed laziness seems applicable is in the headrings. But on the whole, plaiting is considered harder than coiling, both in collection of materials and in actual manufacture.

How long before plaiting becomes completely extinct is questionable. Now that it is definitely on the way out, women feel that it is old and troublesome.

Recently about five women have turned their ability to plait to the making of tourist pieces, but it is dubious if this will prompt a permanent revival in the technic, for the tourist demand is slight. As one girl said when asked why she did not learn how to plait, "They are too much trouble to make and no one wants them any more" (a girl in Cowlic). Most of the articles made for sale are

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1 Kissell, 1916, p. 150

exactly the same as those made for household use. But in the cylindrical baskets a few changes have been made to better suit them to sale purposes. For one thing they are usually smaller and for another they are made of the less durable but more easily worked yucca. The latter is very evidently a copy of the pattern set by coiled baskets. The same woman who started to use yucca has shown further individuality by introducing green strips along with the bleached ones to form a design in color (Fig.9 c).

Another interesting aspect of Papago plaiting is distribution of similar technics in the southwest. There is a very close resemblance between the plaiting of the Papago and that of the Tarahumare, Yaqui, Huichol, and Tepehuane[1].

> "Since the technic of all twilled basketry is known throughout the world, it is clear that all structural parallels do not indicate special historical relationships. However, the twill work of the Pima-Papago suggest historical affiliations with Tarahumare basketry, and this theory is strengthened by the geographical proximity and the linguistic relationship of these tribes[2]."

Several Papago said that they thought their knowledge of plaiting came from Mexico. Unfortunately, it is several

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[1]Bennett and Zingg, 1935, pp. 87-89 and 154

[2]ibid., p.88

hundred years too late to substantiate this connection. On the one hand, technical similarities make a relationship between Papago and Sonoran plaiting highly probable, but on the other hand, equally similar plaited baskets were found in the Canyon Creek ruin [1].

PSEUDO-COILING

Another basketry technic used by the Papago has been termed crude coiling by Miss Kissell because "it is the crudest type of coiling in existence[2]," and bird's nest coiling by Weltfish and Tschopik because "the baskets of this technic look like huge bird's nests in general appearance[3]", and pseudo-coiling in this report because it consists of one element and therefore does not fit into the true coiling classification. The Papago used this technic in making some of their large bee-hive shaped storage baskets. Because the technic is virtually extinct today, it will be necessary to quote from Kissell:

"The very few granaries of crude coiling made by them (Papago) are shaped like a hive, or a barrell with incurving top. Its base is usually a coiling of finer material: willow, cottonwood or more frequently beargrass. The Papago barrel shaped bin...stands on a few boards, or stones, to lift it off the ground. Its opening is covered with an old tray basket or a piece of canvas. At times it reaches the height of a man's shoulder but more usually is slightly lower. These baskets for storage are always found out of doors. Some will last two years, but it seems a more frequent custom to construct a new one each twelve months and this is not a laborious task as one can be easily made in a day[4]."

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[1]Haury, 1934 pp.81-83

[2]Kissell, 1916, p.172

[3]Tschopik, 1939, pp.117-8

[4]Kissell,1916, p.178

a

b

Figure 10

Pseudo-coiling

a- A modern copy of the pseudo-coiled granary baskets (30 cm. high; 50 cm. maximum diameter).
b- Detail of a.

These granaries were made of arrow brush or "shamt"[1] branches with the leaves and twigs left on. The maker started her basket by bending several leafy twigs into the first ring of a spiral. As she started the second ring of the spiral she inserted the end of one stem into the outside of the previous ring ; then the end of the next stem on the inside of the previous ring a few inches further around; the next stem on the outside, and so on, alternating. The leafy end of each twig is wound around the previous twig to form a second row to which the third row is attached in the same way. So this technic is not coiling in the usual sense of a foundation and uniting element; rather it is coiling in which one end of an element serves as a uniting agent and the other end of the same element serves as part of the foundation.

Kohatk is the only village in which anyone under seventy years of age remembers seeing crude-coil granaries. Anita Thomas, who remembers them well, said that "they used to stand outside of the house and were really better than the spaced-stitch granaries because they could stand out in the wind and rain." In Kohatk they have not been made for about twenty years, and until "recently" there were some old ones outside a few of the houses. In other villages they have not been made or seen for "thirty or forty" years.

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1 Kissell, 1916, p. 177

Since this technic has been considered a thing of the past it was a source of great surprise when one was entered in the 1941 Papago Fair (Fig.10). Sevilla Miguel, a middle-aged woman from Kohatk, made a small one expressly for the Fair. This basket differed in the following details from the crude coiling described thirty years ago: it was made of creosote branches, the bottom was of the same material as the side walls, it had a flat lid of the same technic, it was worked counterclockwise and it was only 30cm. high 50 cm. in diameter at the base and 19cm. in diameter at the mouth. This basket awakened much interest, curiosity, and even amusement in the Papago who visited the Fair. Anita Pablo, who has been going into every village on the Reservation for the past four years did not know that the Papago had ever made baskets like that. These attitudes may show how quickly and completely a trait is forgotten when its usefulness has gone. However, I am inclined to believe that it may mean they were never popular in the southern part of the Reservation. The fact that the Coahuilla, Mohave, Pima, Maricopa, Southern Diegueno, Cocopa, and Kamia use this technic might possibly mean that it was a trait recently diffused to the northern Papago, and had not reached the southern groups before the whites introduced wooden bins.

COILING

GENERAL TECHNICS

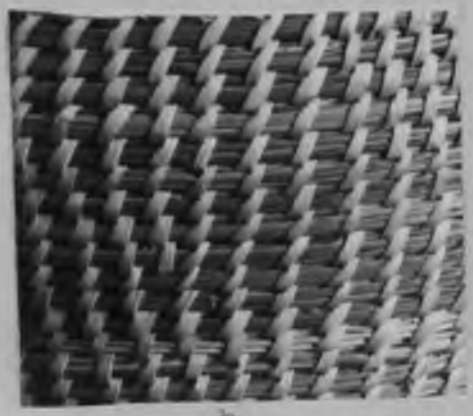
All other baskets made by the Papago are coiled - this means that in 1910 about half of the baskets were coiled and today about ninety-nine percent are coiled. These baskets all have a bundle foundation and close coil. The most outstanding variation is in the placement of stitches in relation to each other, so Papago coiling can be divided into three types: spaced-stitch, split-stitch and close-stitch (Fig.11). After a brief consideration of the use of the three stitch types they will be considered together because the commercial baskets have too many features in common to warrant separate technological discussions.

Spaced-Stitch Coiling

Storage Baskets

The spaced-stitch technic (Fig.11 a & b) was used for in-door storage baskets and small trinket baskets. The former were made in two sizes, those used for storing corn and wheat (Fig. 12c) and those used for storing salt (Fig.12a). One granary basket, found in a house at Anegam where it was used for storing corn, is oval shaped (Fig.12b). No oval granaries were mentioned by Kissell, but this basket is approximately forty years old (R.J.) and apparently represents a little used shape rather than a shape developed since 1910. This basket originally had a flat lid which has been lost (R.J.).

a



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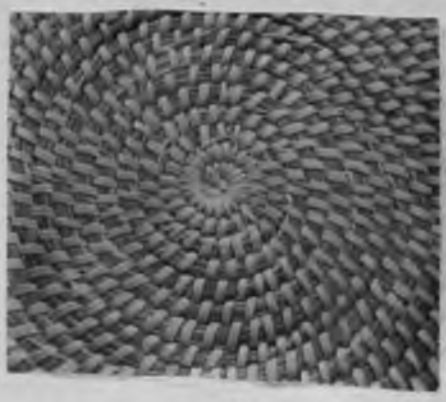


c

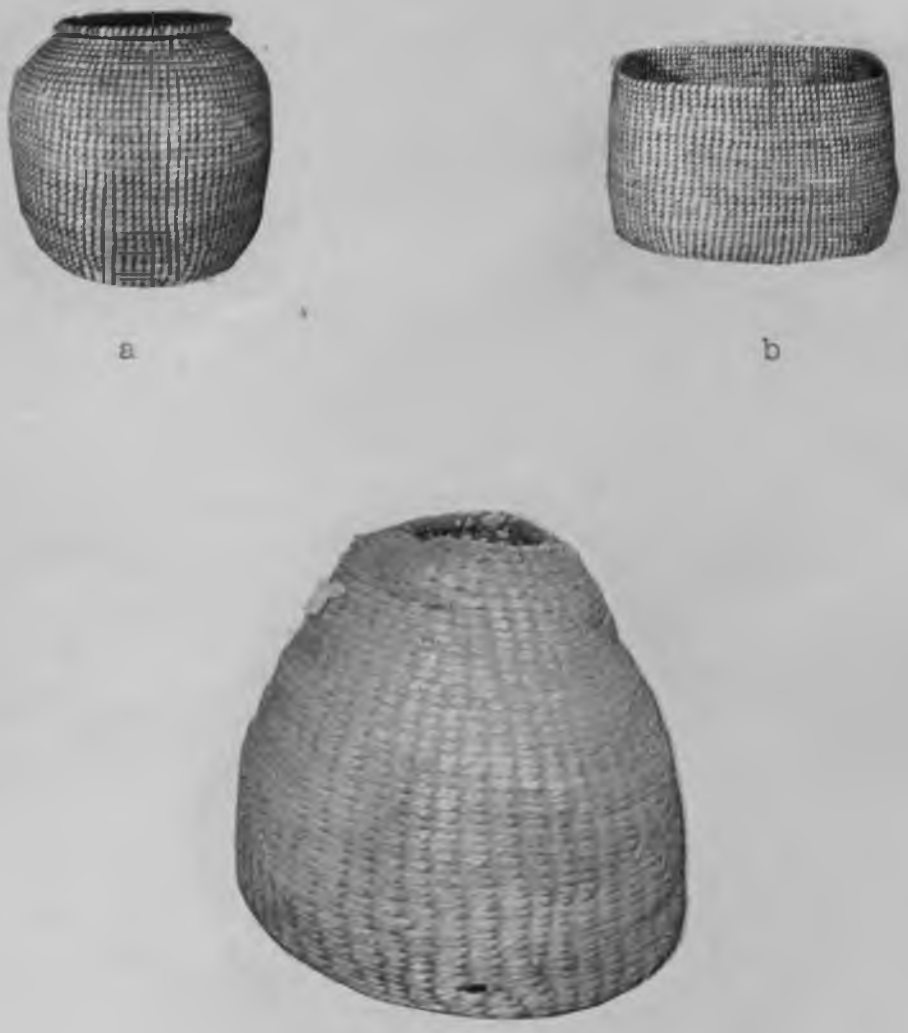
d

e

Figure 11

Stitch types

a- Spaced-stitch. Wheat straw and mesquite bark.
b- Spaced-stitch. Beargrass and yucca.
c- Split-stitch. Work surface.
d- Split-stitch. Reverse surface.
e- Close-stitch.



a b

c

Figure 12

Storage baskets

a- Type used for storing salt. Made about forty years ago and now belongs to Mrs. A.M. Jones. (51 cm. high; 47 cm. maximum diameter)

b- An unusual type used for storing grain and corn. Made about forty-five years ago and now belongs to Mrs. A.M. Jones. (51 cm. long; 37 cm. high)

c- Type used for storing grain. Made about fifty years ago and now belongs to the Papago Arts and Crafts Board museum. (80 cm. high; 100 cm. maximum diameter)

No granary or salt baskets have been made for about forty years. The reasons behind the extinction of the salt baskets are obvious, salt can now be purchased in containers from stores and, more important, the trips to the Gulf of California for salt have been gradually curtailed by the efforts of the United States Immigration Service to keep the Papago from wandering back and forth across the international boundary. But the reasons behind the extinction of the granary baskets are not as obvious, for women who still have them are loath to part with them. Apparently the fact that boxes, bins, lard cans, and gunny sacks were available prompted the older women to stop making granaries and left no incentive for the younger ones to learn how to make them. Informants' reasons were rather vague: "We just stopped making them after the white people came in" (E.C.), "The women got lazy and started using cans and boxes"(J.R.), and one answer that probably hits the nail on the head; "The women preferred to spend the time making baskets to sell for money" (J.R.).

Bread and Trinket Baskets

The spaced-stitch technic was also used in making small baskets for household use. Unfortunately Kissell made no mention of this style of baskets so its history must be reconstructed from the information at hand today. The oldest baskets of this type were obtained in the 1890s, one in Chuichu and two in Gu Achi. The one from Chuichu

a b

Figure 13

Spaced-stitch baskets
Obtained by Mrs. F.S. Herndon in Gu Achi about 1890

a- 28 cm. high; 30 cm. in diameter
b- 17.5 cm. high; 25 cm. in diameter

was an oval basket about 30 cm. long and 10 cm. high that had been used "for trinkets" (F.S.H.). The ones from Gu Achi are shown in figure 13. Unfortunately nothing is known of their use or history (F.S.H.). Although no old examples were seen, the women in Kohatk say that they have always made round or oval spaced-stitch baskets for tortillas and bread. This seems highly probable, since many of the women today use them for this purpose because "the bread stays much better than in tin boxes" (A.T.). All the women in the southern part of the Reservation consider the spaced-stitch baskets made today a copy of the granary baskets. One other fact, the prevalence of this technic today on the Pima Reservation, completes the very insufficient history of small spaced-stitch coiled baskets. From these facts, it would seem that the use of spaced-stitches on small baskets was a trait of the Pima, and Kohatk in aboriginal times and has been developed to a high degree by them, and to a slight degree by the other groups, for commercial baskets.

Commercial Baskets

The use of spaced-stitched baskets for sale was very simply expressed by Anita Thomas; "When we started to sell baskets we made some of them like that. People liked them and they were quicker to make."

Split-Stitch Coiling

A consistent and intentional split-stitch has not previously been reported for the Papago (Fig.14). Neither Kissell nor any other writers have mentioned the technic. Traders who have dealt with Papago baskets, and even the Papago themselves, have not seen split-stitch baskets until recently. From nearly all available information split-stitches started in the village of Kohatk about seven years ago.

> "About six years ago we (A.T. and L.T.) first started to make baskets with the stitches like that. We got the idea from an old granary basket our grandmother had made with some stitches like that. Then the other women in the village copied our baskets, ...we did not mind - anyway they do not know how to make them right, so they don't look very well" (A.T.).

All the Papago informants are in accord with this source of split-stitch baskets; however, one of the traders poked a hole in an otherwise tight story. Mrs. Richmond says that she has been getting split-stitch baskets for the past thirteen years from Hickiwan, Kerwo and Pisinemo. The only split-stitch baskets other informants have obtained from these villages had been made within the last six years by women of Kohatk extraction. Mrs. Juan Xavier reported seeing split-stitch baskets in household use. Again, the only ones seen in this study were baskets made by Kohatk women for sale.

From the evidence at hand I am inclined to believe

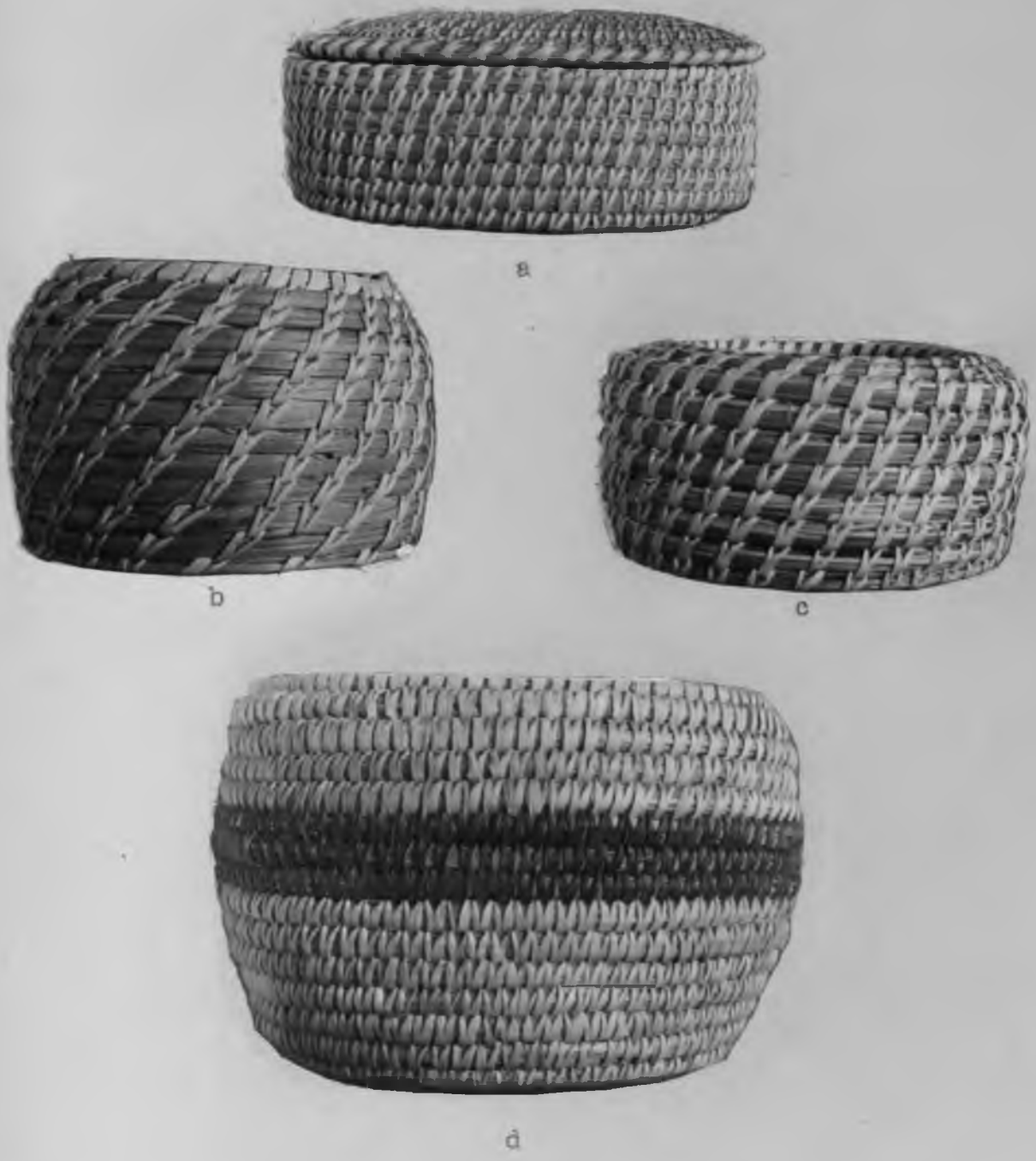


Figure 14

Split-stitch baskets
Given to Mrs. Miller in trade for sewing materials

1/2 actual size

that Anita Thomas' story is accurate, but I should not be surprised if other workers find sufficient evidence to consider that split-stitch coiling has always been used occasionally by the Papago and that its recent popularity, traceable to the Thomas sisters, is a revival rather than an innovation. Since so many stitches are accidentally split on the reverse side, it does seem a little unbelievable that the Papago over-looked the possibility of intentionally splitting stitches until 1934.

Close-Stitch Coiling

Close-stitch coiling was the technic used in making many of the household and gift baskets.

Water Baskets

All of the close-stitch domestic baskets were capable of holding water, but a few baskets were made many years ago expressly for water. In 1910 Miss Kissell obtained the following information on these water baskets:

> "...transporting and raising of water, which was done in the old time water-tight well buckets and bottle baskets of the Papago"[1]

> "Papago water basket jars, now no longer used, were tall, slender, bottle shapes with an incurving neck."[2]

> "Some thirty or forty years ago white settlers in Papagueria remember seeing water carried in two water

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[1]Kissell, 1916, p.190

[2]ibid, p. 191

> jar baskets, thrown over the saddle horse on either side, or attached to the saddle itself."[1]

The only information available on them today was from Anita Pablo:

> "The only one I have ever seen belonged to a man in San Miguel. I tried to buy it from him, but he was an old man and it had been in his family for about eighty years so he asked to have it buried with him. It was olla shaped (shape number 13 judging from a pencil sketch she made) (see table II), coiled of willow and then covered with brown pitch, mesquite I think". (A.C.P.)

The water basket has been out of use for so many years that no further information could be obtained about it.

Parching Trays

Shallow bowls made entirely of martynia were used for parching corn and other seeds (Fig.15a). Since the martynia will burn only at a very high temperature, the coals can be put right in the basket with the seeds. These trays are still in use in many of the homes, although they have been replaced in some homes by metal pans. A few small trays of martynia are made expressly for sale. These are fairly recent and are made as an intentional copy of the household parching trays (Fig.15b).

Basket-bowls

Miss Kissell wrote the following about the use of basket-bowls:

"The primary function of the basket bowl is that of

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[1]Kissell, 1916, p.191

a

b

Figure 15

Parching trays
Bought by the Papago Arts and Crafts Board

a- Domestic type (8 cm. high; 35 cm. in diameter)
b- Commercial type (4 cm. high; 21 cm. in diameter)

a

b

c

Figure 16

Nine baskets
Exhibited in the Papago Arts and Crafts Board Museum

a- 41 cm. in diameter
b- 55 cm. in diameter
c- 47 cm. in diameter

> transportation, its secondary use that of a temporary receptacle...at the present day it transports dry produce only, fruits of the cactus, vegetables, grains, berries, and small seeds, while formerly it was employed as a basket for watering horses, drawing water from the well, and similar purposes...The Papago still do much gathering in the basket bowl."[1]

Today the primary function of the basket bowl is as a receptacle, for about seventy-five percent of the transporting now consists of carrying groceries home from the store in buckets, boxes, and wagons.

The deep basket bowls, termed wine baskets in English, but kʻo hwa (large basket) in Papago, are used today for collecting and preparing the wine used in the rain ceremonies and are used the rest of the year for storing corn and other produce (Fig.16).

Food baskets

Of the food baskets, or trays, Kissell wrote:

> "The tray is the most frequently used basket of these tribes (Pima and Papago), aiding in the preparation of all kinds of foods."[2]

The food basket was used for winnowing grain, cleaning flour, receiving ground flour at the end of a metate, kneading dough, drying foods, and covering ollas or storage vessels. It was also inverted and used as a

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[1]Kissell, 1916, p.191

[2]Kissell, 1916, p.194

Figure 17

Food and gift baskets
Bought by the Papago Arts and Crafts Board

a- Domestic food basket (9 cm. high; 31 cm. in diameter)
b- Domestic food basket (7.5 cm. high; 31 cm. in diameter)
c- Domestic food basket (9 cm. high; 32 cm. in diameter)
d- Domestic food basket (4.5 cm. high; 30 cm. in diameter)
e- Gift basket (3.7 cm. high; 17 cm. in diameter)
f- Gift basket (4.8 cm. high; 19 cm. in diameter)

drum or a resonator for a rasping stick. Some of the food baskets in every household have been replaced by metal dishes, but no homes were seen that did not have two or three willow baskets in use (Fig.17 a,b,c).

"Marriage Basket"

One marriage basket was reported. Anita Pablo's mother had a basket of shape No. 8 (see Table II) about 20 cm. in diameter and 18 cm. in height made of willow with a row of small blue beads around the top[1]. This basket had been used to serve food to the bride and groom in the wedding ceremony. When Mrs. Chico died she requested that this basket be buried with her, so the description is based on her daughter's memory of the basket. No baskets of this type have been reported by other writers or other informants.

Gift Baskets

In the pattern of gift exchange among the Papago, baskets were one of the items used as gifts. They were given to shamans for payment[2], to god-parents at a christening, and at other unspecified occasions. These baskets were always more finely made than the household ones, but otherwise similar to the shallow bowls (Fig.17e & f).

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[1]Since the use of blue beads is found only on Pima baskets it is highly probable that this basket was of Pima manufacture.

[2]Underhill, 1939, p.157

According to Anita Pablo "If a woman could not make very good baskets and she wanted to give someone a basket, she would have a good basket maker make one for her." These gift baskets were considered a work of art and highly cherished, so they were used as ornaments rather than utensils. It is usually a gift basket that is brought out for the ceremonies because they are "prettier and better."

On the whole, domestic close-coil baskets have undergone fewer changes in the last thirty years than any other style of domestic basket. True, they have been partially replaced by pieces of canvas and by metal utensils, but they are still used so consistently that they do not seem to be on the verge of complete replacement.

Commercial Baskets

A few of the domestic baskets are sold to traders, but the majority of commercial baskets are made expressly for selling and have been changed in shape, material, and decoration from the domestic types.

SPECIFIC TECHNICS

The following sections will be concerned with technological aspects of all Papago coiled baskets with special emphasis on modern commercial baskets and heretofore undescribed technics found in the older domestic baskets.

Materials

Use

At the base of all Papago basketry technics is the material used. For coiling the following materials are used commonly:

For spaced-stitch storage baskets:
Foundation - wheat straw, beargrass, or ocotillo splints. (all of those seen today had been made with wheat straw)
Sewing elements - mesquite bark

For spaced-stitch small baskets: and split-stitch baskets:
Foundation -cattail, beargrass, and shredded yucca leaves
Sewing elements - willow, cottonwood, yucca, martynia

For close-stitch baskets:
Foundation - beargrass, cattail, yucca, Spanish bayonet
Sewing elements - willow, cottonwood, yucca, martynia

A few other materials, used occasionally or as substitutes for those mentioned above, will be discussed later.

Collection and Preparation

Beargrass

Beargrass is the most popular foundation material because it is pliable and it can be collected at any time of the year. It is used almost invariably in the southern villages because the best sources for beargrass are in the foothills of the Baboquivari mountains.

To collect beargrass a group of women go out on foot, or in a wagon, to the source of supply. They go equipped with a jack-knife, a kitchen knife tied onto a stick, a sickle, or an axe, and they are happier if they have a

a b

c d e

f

Figure 18

Materials prepared for use

a- Cat tail
b- Beargrass
c- Unbleached yucca
d- Bleached yucca
e- Willow
f- Devil's claw

pair of thick gloves to protect their hands from the saw-toothed edges of the leaves. After selecting a plant with long leaves, they proceed by grasping a handful of leaves, bending them away from the plant and cutting them about four inches above the ground. For convenience and in order to obtain longer leaves, they cut them from the outside of the plant (Kissell reported that the women cut beargrass from the inside of the plant, but no evidence of this practice is found now).[1] When they have cut a handful of leaves they grasp the bundle three to four feet above the base and jiggle it back and forth to shake out the shorter leaves. The amount the women collect at one time depends upon the number of baskets they plan to make. They figure that the long leaves from two vigorous plants yield enough beargrass for "about fifteen medium sized baskets" (J.A.). After they have collected all they want, the women return home to scrape the thorny edges off with a knife. Then they bundle the leaves and put them in the store house (Fig.18 b). They are never dried in the sun, because they are easier to work with when they are green. It is apparently a matter of individual preference whether the leaves are split all at once or in small lots as they are needed. Whenever it is done, the leaves are split by inserting a knife or an awl at the base and splitting

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[1]Kissell, 1916, p. 198

lengthwise. Each half is again halved, so the average leaf gives four or eight narrow strips for the foundation.

Cattail

Cattail is another very popular foundation material. Baskets from the northern villages such as Chuichu, Kohatk, Kaka, and even Emika usually have a cattail foundation. The only supply grows in the irrigation ditches at Chuichu, Gila Bend, or on the Pima Reservation so women in many of the northern Papago villages have to buy their cattail from one of these sources. Cattail is collected in the late spring or early summer by cutting the stalks near the base and splitting them once lengthwise. The splints are bound into bunches about five feet long and a hand's grasp in diameter to be stored until they are used or sold (Fig.18a). Just before using cattail in a basket, the women dampen the stalks and split them again into finer pieces.

Spanish Bayonet

Although beargrass or cattail is preferred, if a woman has neither it does not prevent her weaving. In villages on the western part of the Reservation where other materials are difficult to obtain Spanish Bayonet is used sometimes. Since its preparation is laborious it is not used often. First the leaves are pulled out of the plant, a job which requires cautious manoeuvering to avoid being pricked. Then the leaves are pounded with a

stone or iron hammer to break up the pulp. Next the leaves are dried in the sun so that the parenchyma can be removed by rubbing the fibres between the hands. These clean fibres are then put in bunches to await use.

Yucca

The shreds of yucca that are left from preparing the yucca weft are frequently used in the first few rows or in handles and knobs "because they bend easily" (J.A. and R.P.).

Cottonwood

Although no examples were seen, both Miss Kissell and present informants report the occasional use of cottonwood splints for the warp.

String

About nine years ago Anita and Lena Thomas used cotton string for the foundation of their miniature baskets. Actually, the material used for the foundation does not seem to be particularly important. Several baskets were seen in which two, and even three, different materials were used. Two baskets from Hickiwan had an unidentifiable grass for the foundation of the last five or six coils. So, unless a particularly pliable foundation is required for the intricate curves found in commercial baskets, any material available can be shredded and used. However, the material used for the weft is more consistent.

Willow

Willow splints were used for the sewing elements in all domestic bowls and in a few commercial baskets, especially those made in Chuichu, Emika, Kohan Kug, Kohatk and Tat Momoli - i.e., villages near the source of supply.

Willow splints were collected in the early spring by cutting the new shoots off the trees with a heavy knife. In the old days they used to boil the shoots to remove the bark; by the turn of the century they just peeled the bark off while the twigs were still damp, the method which is still employed (A.C.P.). The twigs are then split down the middle by holding the twig between the teeth and guiding the split with the fingers. For very fine baskets the twig is split in three pieces. These prepared splints are rolled into a ring to await use (Fig.18e). Just before using a splint, the basket maker softens it in water.

Cottonwood

Cottonwood splints were used in a few domestic baskets and in a very few commercial baskets. It is considered pretty but unsubstantial for household use. The splints are collected and prepared in the same way as the willow splints (Fig.17d).

Ironwood

Once in a while young shoots of the ironwood tree are used in place of willow, especially in mending old

baskets, because ironwood splints are supposed to be strong. One woman at Pan Tak had run out of willow splints and could not buy any more, so she got some shoots of the ironwood tree to finish her basket. The difference was hard to detect.

Martynia

Martynia, devil's claw, is used by itself or with one of the buff-colored sewing materials. It is the only plant used in basketry that is not entirely wild. Although the plant is native to the region, at some time in the past the Papago found that it yields much longer hooks if it is encouraged to grow in the fields. In the early fall the women go to their fields every three or four days to pick the pods as they ripen, i.e., when the ends are hardened. As they are picked they are put into a pile in the yard to be hooked into balls for storage. The pods have a green casing which comes off easily when they are dry, therefore, fine ashes are poured over the pods" to make them dry faster" (A.C.P.). Some women take the casings off before putting them into balls, others leave the casings on until just before they are used. Those who do the latter say that the pods stay blacker if the casings are left on.

In the past, when the basket maker wanted to use

martynia she buried several of the hulled pods in the ground for a day to dampen them. Today, she just puts them in a wash tub full of water. The next day she takes the pods, breaks them apart, and cuts the end of one point lengthwise into three equal sections. Then she strips them down, holding the point between her teeth. She usually gets two strips from a pod, one from the front and one from the back (Fig. 18f).

Yucca

One of the most outstanding changes in the development of basketry for commercial purposes is the use of yucca strips instead of willow or cottonwood for the sewing elements. Unfortunately no information was obtained which makes possible a definite conclusion about how long the Papago have been using yucca. The following information is submitted for what it may be worth to other workers in finding out when the Papago first used yucca in their baskets:

1-Some of the basket materials from Ventana cave are yucca. But so far the relationship between the basket makers of Ventana cave and the modern Papago basket makers has not been determined.

2-In 1910 Miss Kissell stated in a conversation with Mrs. Herndon, but did not include in her publication, that the Papago had been using yucca for about twenty-five years.

3-J.N. said that when he was a boy his mother made baskets of yucca to sell to the Mexicans. This would have been approximately 1890.

4-Five of the older Papago women who were asked, answered, "it was before my time."

5-Russell reported the Papago were trading agave baskets to the Pimas in 1901.

6-All the women who were asked said that using yucca is new, but varied the time of its innovation from twenty-five years ago to "when the white people first came into Tucson."

7-The earliest datable yucca basket was made between 1890 and 1900.

8-By 1908 there were many yucca baskets on the market.

9-Although they do not agree on the time of its innovation, all the Papago do agree that they started using yucca when they started to sell baskets. Because the yucca does not wear as long as willow or even cottonwood it was unsatisfactory for use around the house, but the yucca is so much easier to prepare and use that they made their baskets to sell out of yucca.

10-A very few yucca baskets are seen around the homes today. Most of these are small and used to hold sewing items and trinkets. But occasionally a bowl-shaped yucca basket will be used for drying peppers or beans.

From these scattered facts it can be concluded that domestic baskets have been made of willow splints since aboriginal times and that commercial baskets have been made of yucca since at least 1900. There is no indication that household baskets were ever made of yucca.

Juanita Ahil of Ali Chukson gathers yucca in the universal way, so a description of her method will be representative for all collectors (Fig.19). She gathers

a

b

c

d

Figure 19

Juanita Ahil collecting yucca

a- She reaches for the center leaves.
b- She pulls out the new leaves in the center of the plant.
c- She shakes out the leaves that are too short to use.
d- She strips the white margins off the leaves.

her yucca in the spring or early summer for two reasons, "The leaves are too thick any other time of year" and "The hot summer sun bleaches the yucca more rapidly." Mrs. Ahil gathers her yucca in a field near the highway on the eastern edge of the reservation. To gather the leaves used for the white part of a basket she pushed back the old leaves growing on top of the plant and grasped the cone of new leaves. She pulled out this cone easily, for the leaves are tender. She then held the bunch near the top and shook gently to let the short leaves fall out. When she had gathered a bundle approximately a hand's grasp in diameter she bound it with one of the short discarded leaves. In preparing the collected yucca for use, her first step was to remove the white margins of the leaves by inserting her thumb nail between the border and the main part of the leaf. The margins split off so easily that she merely grasps it between the thumb and forefinger and pulls, first toward the base and then toward the top.

The next step in preparing yucca is to split the leaves with one of several implements: an awl, a knife, a knife blade, a nail, or even a safety pin. The sharp point of the tool is inserted in the longitudinal center of the leaf and run down toward the base, then the leaf is turned up and the tool placed in the bottom of the split and run

down to the point. A few women cut off the thickened end and split the leaf with one motion, starting from the bottom.

Since the leaves range from a very light green to almost white when they are picked, the bleaching process is not very difficult. The woman lays the freshly cut leaves on the ground in the sun, weights them down with a sahuaro rib, an ocotillo branch, or a board, and about every hour she rolls the leaves over to sun them uniformly. The yucca is always dried immediately after gathering "to prevent mildew" (J.A.). A few women, bleach their yucca before splitting it, but it is the general opinion that yucca splits more easily when it is damp, and that it dries faster when it is split.

The prepared yucca is stored in bundles to await use (Fig.18c & d). When she is ready to use the yucca, the basket maker dampens the strips by immersing them in warm water and then wrapping them in a piece of cloth. She does this before she starts her housework in the morning, so by the time she has finished, the yucca is softened and ready to weave. The basket makers say that the yucca becomes damp enough in about an hour, but it is my experience that it takes at least two and preferably three hours.

The whiteness of the finished product depends not only on the bleaching, but also on the dampening. If a

woman dampens more yucca than she can use in one day and it lies in the damp cloth too long it will become yellowish and the epidermis will peel off. Careful basket makers never leave their yucca damp very long, for the goal of all yucca basket makers is to get smooth and uniformly white sewing elements.

Each basket maker prefers to collect her own yucca, for some like to work with short pieces and some with very long pieces, and they all have more confidence in their own bleaching. Nevertheless, several women in Sonora, particularly in Skagoksyak, do collect yucca for the express purpose of selling it to basket makers who are unable to get an adequate supply of their own.

Other materials used in coiled baskets are put in for decoration along with the materials mentioned above, and will be discussed in the section on decoration.

Horsehair

Another material used for coiled baskets is horsehair. Apparently only one Papago, Candaleria Manuel, from Ventana and Kaka, make horsehair baskets. In 1915 Mrs. Herndon obtained a horsehair basket "from somewhere in the southern part of the Reservation" (Fig.20). The only others encountered have been made since 1930 by Candaleria. Whether or not she was inspired by her brother who makes horsehair belts and rope is not known.

Figure 20

Horsehair basket

Given to Mrs. F.S. Herndon about 1920
(9 cm. in diameter and 3.5 cm. high)

These baskets are made of the black and white hair from the horse's mane because "The tail is too stiff" (Candaleria Manuel to A.C.P.). In her earlier baskets she used black for the foundation and black and white for the weft, but the black coil gave a greyish caste to the entire basket, so recently she has been using a white foundation on Mrs. Pablo's suggestion. Of the baskets seen, one was straight-sided (shape number 3, Table II), about 4 cm. in height and 6 cm. in diameter; three were bowl-shaped (shapes number 5 and 6, Table II) and about 8 cm. in diameter. The straight-sided one and two of the bowl-shaped ones had a checkerboard design, and one of the bowl-shaped baskets had a simple squash blossom design. Three were made with close-stitches, the individual hairs being threaded through close enough together to hide the foundation. One, the most recently made, had spaced stitches with eight or nine hairs sewn together about .3 cm. apart. Actually the technic is merely an application of different materials to the basic Papago coiling technics: subtype f starting method (Fig.21), bundle foundation, spaced or close stitches, unhammered coils, average of 17 coils per 5 cm., and a counterclockwise coil.

> "She told me that she has to wait for the horse's mane to grow out each time, so she can't make very many horsehair baskets" (A.C.P.).

Horsehair baskets of a different character are made by a Pima in Sacaton. Hers are olla shaped, about 12 cm. high and have larger, rounder coils.

Tools

In addition to her materials, the basket maker also needs certain equipment before she can start working on her basket. She needs tools for hammering, for puncturing and for cutting. For hammering she uses whatever is available, for the anvil, a flat-topped stone, a chunk of concrete, a mano, or a piece of railroad rail; for the hammer, a plain iron hammer, the head of a sledge hammer, or a stone. One woman uses a three-quarter grooved stone axe. For cutting tools there is no more consistency in the tool a woman chooses - it may be a razor blade, kitchen knife, jackknife, knife blade, or just her teeth. For puncturing, she prefers an awl made from an umbrella rib with a mesquite or ironwood handle. These awls are made by men on the Reservation who charge the women about thirty-five cents for one. The only variation in these awls is in length. A woman uses what she is accustomed to.(In making a basket I noticed that I quickly became accustomed to a long awl and the shorter ones felt extremely awkward). The other necessary utensils are a mat, canvas, or braided rug on which to sit; a bowl or a tin cup of some sort - frequently an old coffee can- in which to keep water, and a piece of damp cloth containing the moist yucca strips.

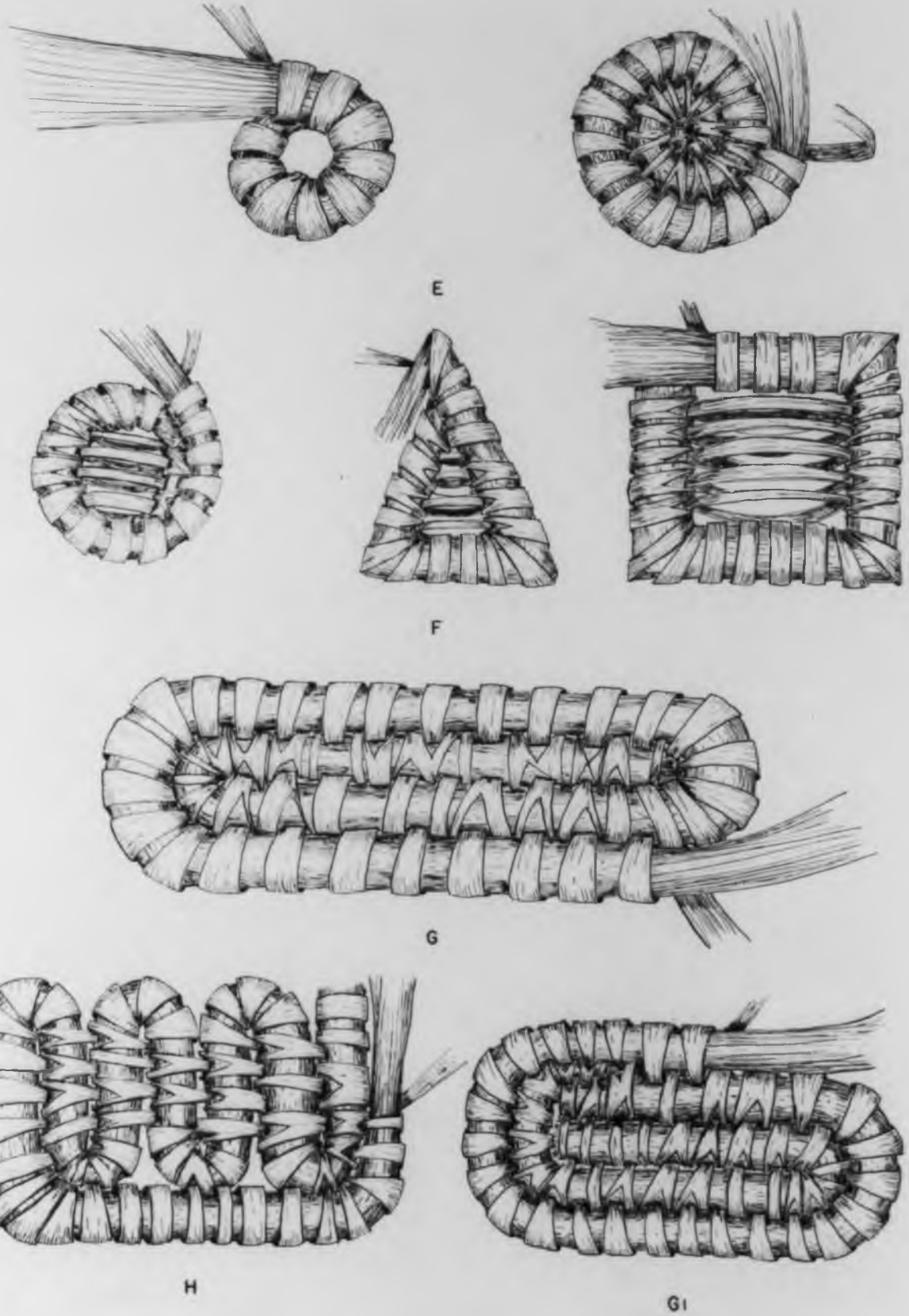

FIG 21 METHODS OF BEGINNING COILED BASKETS
WRAPPED TYPE

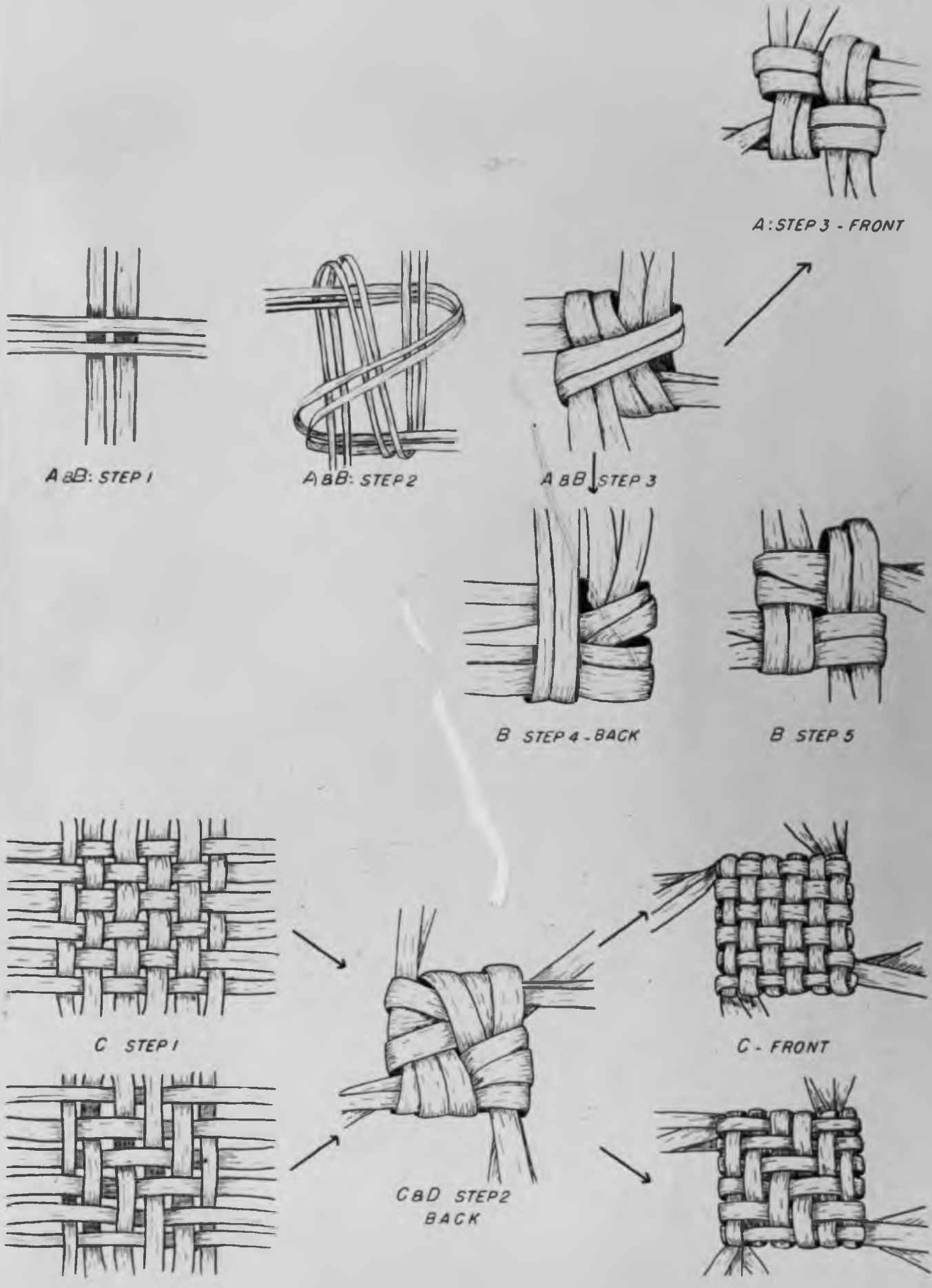

FIGURE 22

METHODS OF BEGINNING COILED BASKETS

KNOTTED TYPE

With her materials prepared for use and her tools at her side the basket maker sits down either in the sun beside her house or inside the house by a window or door in the day time, or by a lamp at night, and is ready to start coiling her basket.

Starting Methods

The Pima and Papago have two distinct methods for starting a coiled basket: one is found among all basket makers, the other is unique today to these two groups. The universal start is to wrap a short length of the foundation material, bend it, and then sew the second coil to it. There are several ways to accomplish this: to sew the first coil to a tiny ring of the foundation material bound with the sewing element (Navaho, and Ventana Cave); to wrap a few centimeters of the foundation, bend it and sew the second coil, thus leaving a hole (Papago wrapped type Fig 21f, Pima, Washo, Pomo); to make a simple knot of the sewing material to put in the center hole (Pomo); to fill in the hole with various fancy openwork arrangements (Seminole); to make the first coils so thin that no hole is left (Hopi); to make the first coils the same size but curled so tightly that there is no hole (Pima, Apache, Navaho Pomo, Tulare, and Mission Indians), and to sew the first coil to a hide (Eskimo) or board (British Columbia).[1] The start that the Pima and Papago exclusively among modern tribes use for coiled basketry is a knot made of four or more strips

1 On the basis of basket collections in the Arizona State Museum and the San Diego Museum of Man.

of the sewing material (Fig.22) in such a way that the yucca or willow strips stick out about twenty centimeters on each side of the knot. These strips are then split with an awl, bent around the edge of the knot, and serve as the foundation for the first row or two of coiling. The foundation technic puts certain limitations on the method for starting. With a rod or splint foundation only the wrapped type is possible. With a rod-and-bundle or bundle foundation both types are possible. However, the Pima, Papago and prehistoric inhabitants of the Ozark Bluffs were the only groups now known to make use of the knot start.

The only information on the use of a knot in preference to wrapping was that "If you left a hole in the bottom of a wine basket it would leak" (L.J.), and "I like a knot because I don't prick my fingers so much" (R.P.).

Today the knotted type is found in seventy-seven percent of all Papago baskets and the wrapped type in only twenty-three percent. Within these two types there are several variations, the knotted type can be divided into four subtypes: a, b, c, and d (Fig.22). Subtype a is the commonest of any starting method, for it occurs in thirty-eight percent of all baskets (Table I). Subtype b is found in thirteen percent of all baskets, and basket makers from seven scattered villages do not use the type at all. The women who do use subtype b are aware that it is a

variation of a and prefer it because "The baskets lie flatter" (D.C. and A.C.P.). Subtype c has a very definite geographical distribution. In the southeastern part of the Reservation, including the San Xavier Reservation, it constitutes fifty-five percent of all knot types. Going west, the popularity declines to thirty-eight percent at Quijotoa and only thirteen percent at Hota Son Vo; going north, it declines to ten percent at Gu Achi and nine percent at Kohatk, and zero in Chuichu. Subtype c2 ranges from a knot under a centimeter square made with six or eight strands up to a true plaited center six or eight centimeters square. When more than around ten elements are used for this start the basket maker does not tie a knot on the back; instead, she bunches a few of the elements to start her coil and picks the rest up as she sews around the square. This technic is quite rare and is found side by side with type c. Although the construction of type d varies from c only in the rhythm of the plaiting, its distribution is somewhat different and women who make type c do not alternate with type d. Of the seven villages from which type d occurs, type c occurs from only four. The popularity of d seems to be centered in the middle portion of the Reservation with a few examples from the southeastern villages and, like subtype c, no examples were

found from the northwestern villages. The type does occur, however, on the Pima Reservation.

The variations in the wrapped type can be grouped into subtypes, e, f, and g (Fig.21).

Subtype e occurs in four percent of the close-stitch yucca baskets, eleven percent of the spaced-stitch, and twenty percent of the close-stitch willow baskets. It comes chiefly from Gu Achi and Kohatk, and occasionally from Xan Xavier and Ali Chukson. Variations of subtype e are used in odd-shaped baskets where a knot could not be used and subtype f would leave a large hole (Fig.21 e).

Although subtype f is one used by almost every basket making group in the world it is found in only three percent of all Papago baskets. (This figure does not include the storage baskets which were made with this start). The only yucca close-stitch baskets on which a subtype f start occurs come from Gu Achi and Kohatk. This distribution would seem to indicate that type f is a survival, since these were notably backward villages until recently. It can also be noted that it appears in the same villages as subtype e.

Subtype g is also used the world-over for oval baskets. All of the Papago oval baskets and a few round ones have the subtype g starting method. Subtype g_2 is of particular interest because it involves the same technic used in the divided double coil baskets except that the second coil is not carried on. Four baskets with this starting method

were seen, but in no case was the maker known, so no further information was obtainable.

The starting method shown in Fig. 21h is technically unrelated to either type but since the only example seen was a substitute for type g it will be considered a subtype of type II. Nothing is known about this example except that it was made at San Xavier. (This same technic was seen on one handle, but again nothing was known about the history of the basket).

A basket maker is inclined to habitually use the same starting knot. Out of sixty women who sold more than five baskets to the Arts and Crafts Board during the fall and winter of 1941-2, only five used more than one type of knot for a circular basket. At least three of these five women fluctuated between types used consistently by other members of their family. For example, Juanita Ahil uses type a and c; her mother used type a and her mother-in-law uses type c. Frances Montana uses type b and c, her sister uses b and her cousin c.

On the whole, the starting knot used is determined mostly by individual preference, with some influence by the teacher and other members of the family. In the Castillo family Delphine uses type b "because it makes the basket lie flatter," Alice, a sister, uses a and b and Eliza, the mother, uses a "because that is what I am used to." On the other hand, the four Pablo sisters all make type c knots.

There are some correlations between starting type and other features of the basket. Type II is invariably used for round baskets and subtype c occasionally used for a square basket. Since approximately seventy-one percent of the baskets made fall into the medium-sized coil class, it is only natural that all types of knots are found on medium sized coil baskets in the same proportions as the appearance of the various types for the entire Reservation. All types are also found in the coarse-coiled baskets, but in fine-coiled baskets only subtypes a, b, and g are found. Only nine percent of all baskets can be classed as fine coil, so there is very probably no correlation. What does govern the size of the coil is the number of strands put into a knot. For a fine-coiled basket only one or two elements are put into the knot; in a very coarse-coiled basket as many as ten may be put in.

One interesting hypothesis came out upon inquiry about use of various starting types. The women in the south-eastern villages where type c is the most proponderant type have a definite reason for using that start - "because it is larger than other methods and I don't prick my fingers while sewing the first few coils" or "because it gives me something to hold onto." Women in the villages where the percentage of type c falls off give no reason for using it

other than "that is what I am used to." This would seem to indicate that in the numerical center of distribution there is a reason for using a certain trait, away from that center the reason is lost and the trait occurs as a meaningless way of doing something. This is suggested merely as a hypothesis, for the informants from the south were better known and therefore more willing to give detailed information.

TABLE I

Village Distribution of Starting Methods

	Type I				Type II		
Close Stitch Yucca	a	b	c	d	e	f	g
Aguirre Vaya			43%	40%			17%
Ali Chukson	45%	4.5%	14		18%		18
Anegam	17	50					32
Chiawuli Tak			100				
Chuichu	100						
Emika	100						
Gu Achi	42	8	10	14	8	5	12
Gu Oidak	14	14	52	9			11
Hickiwan	33	67					
Hotason Vo	16	50	16				18
Kohatk				80			20
Kom Vaya	8	9	83				
Koson Vaya	37	53					10
Pan Tak	20		80				
Quijotoa	60						40
San Serafin				46			54
Sikul Himatk	5		38				57
Schuchuli		50					50
San Xavier	29	3	53	3	2		10
Sil Nakya				100			
Topawa	58		42				
Viopuli			60	40			
	29%	14%	28%	9%	4%	1%	15%
Close Stitch Willow	49	5	10	29	20	9	5
Spaced-Stitch	46		16	8	11	3	16
Split-Stitch	51	16	.9		8	6	18
	38%	13	19	7	6	3	14
		77%				23%	

Coiling Methods - General Procedure

After the basket maker has pulled the knot tight by tugging at each of the four ends, her next step is to cut off the sharp ends of the yucca leaves projecting from the knot and split each leaf several times with her awl. She then bends two sets of shredded leaves around to her left. The face of the knot that will be on the working side of the basket is determined by the formation of the knot, for the strips are bent from right to left around the side from which they project. This done, the basket maker reaches in her cloth of dampened yucca and takes out one piece. She holds the sharp end between her teeth and scrapes off the mid-veins of the leaf with downward motions of a knife. Then she carefully places the awl in the knot at the corner where a group of shredded leaves project and punctures it by guiding the awl between her second and third fingers and exerting pressure between her thumb and first finger. She leaves the awl in the hole until she has the sewing element ready to insert. Then she takes hold of the knob of the awl between her third and fourth fingers on the outside of her hand, jiggles it sideways to make the hole large enough to insert the element, and pulls it out,

leaving the awl sticking out from the back of her hand between the two fingers. She threads the leaf into the awl hole for several inches and then reaches over to the side held away from her and pulls it through. She then punctures a second hole to the left of the first one, threading the leaf into this hole, looping it over the strips of yucca and pulling it tight. She repeats this process across the top of the knot, then bends down the second set of strips projecting from the knot and sews them in the same way, continuing until all four of the ends have been sewn down to the knot and the knot is encircled with one row of coiling. The second coil is sewn in the same way with the awl holes put in the edge of the first coil.

By the time the basket maker has sewn completely around the knot she has picked up enough yucca strands to have a foundation coil of the desired size. Shortly after she starts on the second coil, the strands first picked up will be used up so she will start inserting more foundation elements. For the first three or four coils she uses the material which she has shredded from the yucca leaves "Because it is easier to bend when the coils are small." (R.P.) She divides the bundle in half and inserts the added foundation elements in the middle "so they won't show" (R.P.). Most of the women put the coils on the anvil and hammer them as they finish each coil "because it is easier to sew through the coil after it is hammered--it is thinner" (R.P.).

Figure 23

Partially made basket

Being worked from the concave surface

This is the basic procedure used by all women who use a knotted type starting method. The women who use a wrapped type starting method wrap the yucca leaves around the first coil and sew the second coil to it in the same manner.

Variations in stitching method, working surface, size of coil, shape of stitch, shape of basket, excellence of workmanship, etc. all occur within this basic coiling method. (Fig.23)

Coiling Methods - Variations in Procedure

Placement of Stitches

Spaced-stitches:

In making spaced-stitch baskets an occasional maker places her awl hole exactly between the stitches on the coil below, but most makers place the stitch to the left of the preceding stitch (Fig.11a & b). In the former, the ideal is to have the stitches evenly spaced; in the latter, the ideal is to have even, vertical rows of stitches. Good basket makers say that you should keep the same number of stitches on each coil after you have turned up from the bottom; however, in several baskets new vertical rows of stitches, expansion stitches, were added (Fig.11b). The stitches are either vertical or slightly diagonal. In making storage baskets the stitching elements were from 3 to 7 centimeters wide and from 4 to 10 centimeters apart.

Split-stitches

To make split-stitches the procedure is much the same as that for small spaced-stitch baskets, i.e., the ideal is to obtain even, vertical rows of stitches that may be either absolutely vertical or diagonal from left to right ascending the wall of the basket. The stitches are split by inserting the awl through the exact center of the stitch on the coil below, splitting it on the work surface. It is put through at a slight angle so it emerges on the non-work surface to the left of the stitch on the row below. Consequently the non-work surface of a split-stitch basket is indistinguishable from the spaced-stitch technic (Fig.11c & d).

Close-stitches

In making close-stitched baskets the sewing elements are placed so close together that no warp is visible (Fig.11e). In yucca baskets these close-stitches occur in two shapes: rectangular and tear-drop (Fig.24). These variations seem to result from the width of the yucca elements relative to the width of the coil, the dampness of the yucca and the placement of the awl hole in the preceding row. The rectangular stitches, which are found in many of the well made yucca and all of the willow baskets, are made with a medium damp, relatively narrow strip inserted through a circular

a

b

Figure 24

Coasters showing variations in stitch shapes

a- Rectangular stitches (coaster 7.5 cm. in diameter).
b- Tear-drop and occasionally split stitches.

awl hole placed between the stitches on the preceding row. The tear-drop shaped stitches bulge a little in the middle, are relatively wide, and are more apt to overlap than the rectangular-shaped stitches. To obtain a tear-drop shaped stitch, the maker works with a broader, damper splint and she wiggles her awl side-ways, thus pushing aside the stitch on the lower row. Although the tendency is to place the stitches between the stitches on the row below, if the stitches are broad the women will split the stitch. When asked where they placed their stitches the women answered either between or in the middle of the stitch, but they seem to prefer putting it between.

Stitch shape is one feature that is always consistent with one basket maker, and usually consistent within a family. For example in the Castillo family two sisters in Kóson Vaya, a cousin in Gu Oidak, and another cousin at San Xavier all make the rectangular stitches. Even if a woman's stitches are on the border-line between these two shapes, she will consistently stay on the border-line.

Size of Coil

Another outstanding variation in the method of making a basket is in the size of the foundation coil. On close-stitch baskets the coils range from 2½ to 26 coils per five centimeters. However, the mean for the reservation is

only seven coils per five centimeters.

The size of the coil can be broken down into three main divisions:

	Average of all coiled baskets
Broad coil (up to 5 coils per 5 cm.)	25%
Medium Coil (5 to 10 coils per 5 cm.)	70%
Fine coil (10 to 18 coils per 5 cm.)	2.2%
Miniature coil (18 to 26 coils per 5 cm.	2.8%

The variations in coil size follow some village distribution: the broad coils predominate in baskets from Anegam (67%), Gu Oidak (71%), Koson Vaya (100%), Quijota (60%), San Xavier (61%), and Sikulhmatk (100%). These villages all speak pure or mixed Totokavanya, but there are other villages in this same dialect division with a low percentage of broad-coil. From all other villages the great majority of baskets are medium-sized coil with a few fine coil. The fine coil was used in aboriginal times for the gift baskets.

The miniature coils can be considered a specialization of the generalized technic since only about five or six women use it. The finest miniature baskets were made

a

b

c

d

e

f

g

h

i

j

Figure 25

Miniature baskets
Bought by the Papago Arts and Crafts Board

1/4 actual size

about 1934 and 1935 by Anita and Lena Thomas who used willow weft and a piece of string for foundation. Other miniature baskets are made by two women in Gu Achi (Fig. 25 i, & j) one woman in Hickiwan (Fig. 25 b-d) and a cousin of hers who lives in Hota Son Vo (Fig.25 e). A few other miniature baskets have turned up, for example one from Ko Vaya, but the four women mentioned above are the chief source of supply. None of the Papago miniature baskets are as finely made as those made by two related women on the Pima Reservation who will make an entire basket only about 2 cm. in diameter. According to Mrs. Herndon and Anita Pablo the women started making miniature baskets about 1920.

Most basket makers become accustomed to handling a certain sized coil which they use consistently. Few basket makers do vary the size of their coil: Cecilia Orasco who makes baskets ranging from sixteen to twenty-four coils per five cm, and Delphine Castillo who ranges from four stitches per five cm. on trays to nine stitches per five cm. on some small coasters. Delphine is the only basket maker encountered who consciously correlates the size of the coils with the size of the basket.

Another interesting characteristic of many Papago, and also Pima baskets is that the coils on a flat bottom are as much as twice as broad as the coils on the side of the basket. In a series of 360 baskets, sixty-seven per-cent had larger coils on the bottom. There are three

explanations for this practice: 1- while the piece is still flat the basket maker can flatten her coils more thoroughly with the hammer and anvil; 2- larger coils go faster and on the bottom they are theoretically hidden; 3- "When I started I was going to make a big basket but decided to make it small" (J.A.).

Shape of Coil

The amount of hammering given the coils affects the appearance of the finished basket as much as the size of the coils. Some baskets are not hammered at all, resulting in round coils with deep grooves; others are hammered so thoroughly that there is a very slight indentation between the flat-topped coils. The vast majority of close-stitch baskets fall between these two extremes and in cross-section the coils are either D-shaped or O-shaped.

The hammering of baskets varies rather consistently with the villages. Very few of the baskets are hammered from Pan Tak (13%) and Chiawali Tak (29%); more are hammered from Schuchuli (66%), Hickiwan (79%), Viopuli (67%), and San Xavier (80%). Several villages have a high percentage of very well hammered baskets, for example Gu Oidak (68%), Sikul Himatk (73%), Menager's Dam, and Emika. Most of the other villages fall into the medium-hammered class. All of the baskets from Ali Akchin, Sil

Nakya, Topawa, and Viopuli had medium hammered coils.

Size of Stitches

Another factor which affects the appearance of the coiling is the number of stitches per five centimeters. On willow baskets there is a range of 8 to 45 stitches per five centimeters and on yucca baskets there is a range of eight to thirty-nine stitches. The very fine stitches are a specialization, but the average basket maker will range from around 12 to 25 stitches per five centimeters. The baskets made by women in the south and eastern villages tend to have broader stitches. At Ali Chukson they run from 10 to 13, at Chiawuli Tak from 11 to 15, at Pan Tak from 10 to 14, at San Xavier from 8 to 15, at Viopuli from 9 to 15, and at Gu Vo from 11 to 16. But baskets from the other villages range from around 10 or 12 to 25 stitches per five centimeters.

The exceptions are miniature baskets which have from 26 to 40 stitches per five centimeters. The ones from Gu Achi and Pisinimo are not quite as fine as those from Hickiwan, Hotason Vo and Kohatk.

Splice

There are some variations in the actual stitching methods, which cause minor variations in the appearance of some of the yucca baskets. One of these variations results from the method of inserting the new strand of

yucca. In a group of 372 baskets, picked at random, 90% had the fag end pulled through even with the edge of the work surface. In the better-made baskets the piece is pulled through far enough so it is seldom visible on the surface, while in many of the poorer made baskets the fag end of the leaf can be seen at the point of insertion. In 2% of this group the end was left protruding beyond the edge of the basket about one centimeter, then when the next loop was sewn, this end was pulled across against the foundation and held down with the loop. In about 8% of this group, both inserts were used. The only reason given for this inconsistency was that some leaves had nice even edges, these were pulled through, but others, especially the martynia, had ragged edges, and these were turned under the next loop (R.P.).

There is also some variation in the treatment of the moving end. Some of the women cut off the moving end on the reverse surface and others put it into the foundation. In the latter case women say that you should split the leaf with the awl before inserting it, but in several cases where the inserted leaf could be seen, it was not split.

Working Surface

One variation in the technic of making coiled baskets is in the working surface. With the exception of a few

left-handed women, all the Papago women work from right to left, producing a counterclockwise coil. That is, they hold the bundle foundation in place with their left hand and make the awl hole and insert the sewing elements with their right hand, placing each new stitch to the left of the one just finished. However, when looking at the coils on the bottom of a basket, sometimes they will proceed clockwise, and sometimes counterclockwise, depending upon which side of the basket the maker held toward her when working. The choice of working surface is correlated almost entirely with the choice of shape. Table II shows the basic basketry shapes. Number 2, the tray-shape, is consistently worked from the concave side. Shape number 3 is worked from the convex side. Shape number 4 shows the greatest variation of working surface within a basic shape. Approximately 85% of the flared-sided baskets are worked from the convex surface, and 15% from the concave surface. In this case it is the proportions within the basic shape that are correlated with the working surface. The baskets of this shape worked from the outside have a median proportion between diameter and depth of 1.6 to 1, and of rim diameter to base diameter of 2 to 1; baskets of this shape worked from the concave surface have a median proportion between diameter and depth of 3 to 1, and of rim to base diameter of 1.5 to 1. About

one in twelve baskets of shape number 5 will be worked from the outside; that one will be much deeper in relation to the diameter than those worked from the inside. Baskets of shape number 6 and 7 are consistently worked from the concave side, consequently more willow baskets are worked from the concave than the convex side (nearly all domestic willow baskets and 62% of the modern commercial willow baskets). Shapes 8 through 16 are invariably worked from the convex surface.

Oval baskets uphold these correlations between working surface and profile, so actually the basic differences between the two working surfaces is in the turn from the bottom to the side of the basket. With very few exceptions, baskets worked from the convex surface have an angular turn completed in one and a half, and at the most two and a half coils, and the baskets worked from the concave surface have a curved turn, with no absolute distinction between the sides and the bottom. For example, the only oval trays worked from the convex side are made with perpendicular sides, set almost at right angles to the bottom. Most of the oval trays are worked from the inside and have a gently sloping edge.

In any of these actual technical variations there is also a very noticeable difference in the excellence of workmanship (Fig.28).

Double and Triple Coils

Double or triple coil refers to the technic of working with two or more foundation coils simultaneously. The only other occurence of this technic is among the Apache[1], Salinan Indians,[2] and one Anasazi basket from Mancos Canon.[3] The Papago use this technic for two purposes: "one, to strengthen the basket" (A.C.P.), and two, to avoid a break in the design.

The first type is found in wine baskets. Although only one example was noted, Anita Pablo says that it is a common practice (Fig.26 and 16a). She gave the following description of the method:

> "The wine baskets have to be as hard and waterproof as possible. The women make them very hard by putting a lot of beargrass or cattail in the foundation in the bottom. Then when she is about one third of the way up the basket she divides her coil into two or three parts, sewing the lower one for a while and then going back and sewing the other. If she divides it into three she will slough off one of the coils after it has gone around the basket a couple of times. She frequently works with the two coils

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[1]Roberts, 1916

[2]Mason, A. J., 1912, p. 147-8

[3]Weltfish, 1930, p.487

Figure 26

Triple coil

Detail of wine basket shown in figure 16a

Figure 27

Double coil

> almost to the rim of the basket before she sloughs one of them off. She ends these coils right at the edge of a design so it won't show" (A.C.P.).

Regina Pablo confirmed this description, adding that "Maybe they do it to make the basket go faster, I have never done it, but I know that many women did it in their wine baskets" (R.P.).

The second use of the double coil is to obtain a design that does not show the break resulting from the spiral coils (compare Fig. 27 and Fig. 24a). Many of the designs are constructed so as to hide the break, either by making a discontinuous design or by making intentional jogs (Figs. 17a and f). But when alternate colored coils which extend clear around the basket are used the break is more difficult to conceal. The double coil technic shown in figure 27 is apparently an old one; but its recent popularity can be traced to a basket made in Anegam which was seen by Mrs. Miller. She was so pleased with the splendid results of the split coil that she showed several women in Gu Achi the method and encouraged them to use it.

Shapes

According to Regina Pablo, to get a good even shape is the hardest and most important thing in making a basket. The shape is obtained by manipulation of the foundation while coiling and partially by hammering.

a

b

c

Figure 28

Commercial baskets
Bought by the Papago Arts and Crafts Board

a- An exceptionally well made yucca basket that took first prize in the 1941 Papago Fair. Made by Delphine Castillo. (16 cm. high; 26 cm. in diameter)
b- A very poorly made basket. (12 cm. high; 7.5 cm. in diameter)
c- A very poorly made basket. (10 cm. high; 8 cm. in diameter)

Aboriginal coiled baskets were made in one of eight shapes[1]. Modern coiled baskets are made in one of nineteen basic shapes (Table II) plus innumerable novelties such as candle sticks, vases, hats, purses, cups and saucers, sahuaro cacti, and even animals (Fig.30).

The simplest of all coiled shapes is the flat disk, which is made with a handle "to hang on the wall" or with no handle "to put hot dishes on" (A.C.P.) (Fig.51c).

A circular tray is made similarly to the plaque and mat, except that the outer coils are turned up to form a low edge. Some trays about 8 to 9 cm. in diameter with only one or two coils turned up are intended for coasters (see Fig. 24); others from fourteen to thirty centimeters in diameter with three to five coils turned up are intended for "bread trays" (Fig. 31a). Some of the earliest yucca domestic baskets were made in this shape with a bird design design in the center.

The straight-sided baskets range from miniature baskets five cm. high, intended for ornament only, to large baskets five meters high, intended for wastebaskets and hampers (Fig. 25 & 51d). Straight-sided baskets about eleven by six cm. are gaining popularity today as a result of the Arts and Crafts Board. Since they have so many orders for

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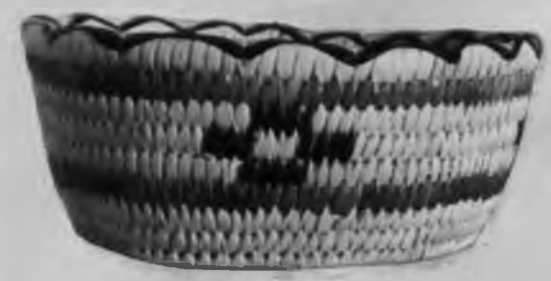
[1]Kissell, 1916, pp. 196-7).

this size, whenever a woman makes a novelty or flaring sided basket she is shown a small straight-sided basket and told that she can get more money for the straight-sided basket (Fig. 29).

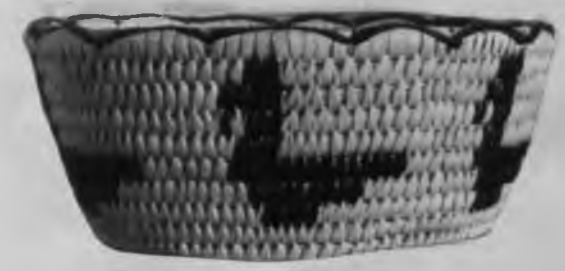
The most popular shape with the makers themselves is shape number four because they are easier to work with and much easier to hammer. But since it is not as popular with the majority of tourists, it is being replaced with shape number 3. See.

Shape number 5, 6, and 7 are the shapes used in the Papago homes. In commercial baskets these shapes made in willow are preferred by the Americans who want really fine Papago baskets, but in yucca these shapes are poor sellers. So the few women who still make willow baskets are encouraged to keep on with these shapes, while the women who make yucca baskets are asked to make straight-sided baskets. Both ethnologists and basket dealers can break down the bowl-shaped baskets into these three catagories: flat bottom, round bottom and pointed bottom. The Indian, too, recognizes the differences, but actually the break-down is of little significance, because a woman may earnestly endeavor to make one shape and succeed in making another shape (for example, Martha Thomas tries to make shape 7, but "it always comes out" shape 6).

Shape 8, with some stretch of the imagination, was



a



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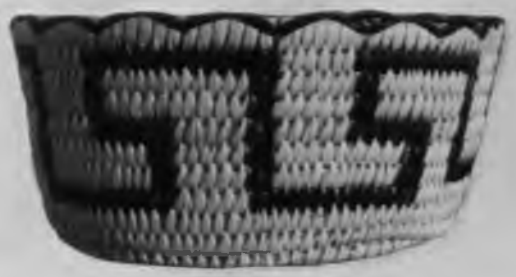

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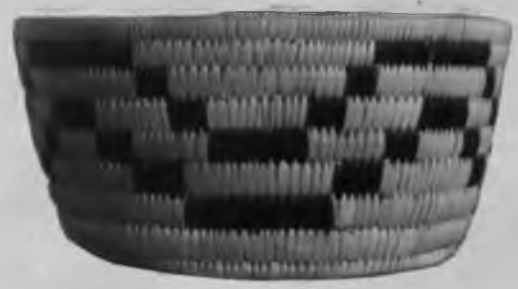

d

Figure 29

Commercial baskets
The type the Papago Arts and Crafts Board encourages

1/2 actual size

inspired by granary baskets. In the small sizes as they occur today they are apparently a recent shape. Number 9 is distinguished from number 8 by having a definite shoulder.

Shape number 10 runs into shape number 3, but there is sufficient distinction between the extremes to draw a division line when the diameter at the center is at least one-sixth as great as the diameter at the base and rim.

Shape number 11 is differentiated from number 10 by a sharp shoulder. Both shape 10 and 11 were used for a few of the wine baskets; however, the majority of wine baskets were shape number 5. A small basket in these shapes is very common in spaced and split-stitch baskets and is not uncommon in the close-stitch yucca baskets.

Numbers 13, 14, 15, and 16 represent the olla shapes found in Papago baskets. In aboriginal times these shapes were used for water bottles and salt baskets. Olla shaped baskets were apparently one of the early shapes adapted to commercial baskets. Of the baskets seen that were made between 1905 and 1925, 57% were olla-shaped. Today only 1.2% of the baskets are olla shaped. Of course, people are more apt to keep a large basket so this percentage is probably too high to be representative of past production; nevertheless, it does show a declining popularity of olla shapes.

Oval baskets were rare in aboriginal times. Kissell doesn't mention any and in the present study one oval storage basket and a few oval spaced-stitch bread baskets are the only indication of aboriginal oval baskets. Today 14.7% of the baskets made are oval. The most recently popularized oval basket is the handled bread tray (Fig.31).

Number 21, novelty shapes, covers a multitued of variations, which can be divided into two main catagories: those made in copy of white men's articles and realistic shapes (Fig. 30).

Some of the baskets which come under the first catagory are:

Those made by sewing two baskets together:

Two hemispherical baskets sewed together to serve as purses have apparently been made for several years Fig. 30e).

One shallow, straight-sided basket sewn to a hemispherical basket of the same size with a hole in the center "It is to put on your dressing table for pieces of hair" (M.A.).

A small straight-sided basket inverted and sewn bottom-to-bottom with a large hemispherical basket to make a fruit basket is a fairly common occurence. One woman brought in two baskets, one for a flower pot,

and one for fruit which she had made by making a small straight-sided basket, inverting it, and coiling a second basket on the bottom of the first (Fig.30f). Cups and saucers are another novelty shape. They are made by coiling a plaque, and then building up the walls of the cup from the center of the plaque. Other novelty shapes include hats, candle sticks, and a little triangular basket with no particular purpose.

The other category of novelty baskets, realistic, includes plants, animals, and humans. Sahuaro cacti are made by coiling a plaque then coiling several loops, sewing them together.(Fig. 30l).

The human, or doll-shaped baskets are very interesting. One woman in Gu Achi made several in 1936 that she sold to Mrs. Richmond. I did not see these baskets, so will follow Mrs. Richmond's description:

> "In 1936 Soly brought in six basketry dolls. The bodies were of coiled basketry, to represent a full skirt, blouse, arms and head. Of these six, two had parasols made of a plaque attached to a stick stuck between the body and arms of the doll; two were carrying little plaited purses, and the others had little pottery jars in their arms. When I asked Soly where she got the idea to make these dolls she replied 'I dreamed about them one night and when I woke up the next morning I started to make them'."

I did see one of the basketry dolls made by Lena Thomas. It was made of one piece with a spherical head, neck, almost spherical body, pinched-in waist and a very full skirt. The hair, arms, eyes and other features were

Figure 30

Novelty shape basketry

a - g- Baskets bought by the Papago Arts and Crafts Board

a- 12.8 cm. high
b- 9 cm. high
c- 12 cm. in diameter
d- 37 cm. in diameter
e- 10.5 cm. in diameter
f- 23 cm. in diameter
g- 34 cm. in diameter

h - m- Life forms in Mrs. Savage's collection, Sells, Arizona.

obtained by green and black stitches.

Anita Pablo also reported having seen some basketry dolls, but from her description, they were probably made by the same woman that sold to Mrs. Richmond.

Animal forms seem to be quite popular and are made by several of the women on the reservation.

"Soly" also made very clever deer composed of two oval rounded baskets sewn together; four legs made wrapping a strand of foundation, looping it and sewing the other half to the wrapped loop (same technic as used in handles); two antlers made by wrapping small bits of foundation, and two ears made by inserting a single piece of devil's claw into the coils.

An unidentified woman in Quijotoa made a basketry turtle by sewing a plaque and a shallow oval rounded basket together, sewing on a spherical coiled head and looped legs.

Turtles, Gila monsters, dogs, and even owls are made by coiling.

Of a different technic is a bird (Fig.30b) that was made by plaiting a large type c knot and wrapping the body, legs, long neck and head. According to the maker this bird was a stork. Horses and other animals

have also been made occasionally with plaited bodies and wrapped legs.

Any village or individual variations which might have occurred in shapes in the past have been obliterated today by dealers who give the orders for baskets of a specified shape. For example: the oval-handled trays were first(FIg.31) made abundantly by the Antone family at Sikulhimatk to fill orders for Carnahan's trading post. Because these trays proved so popular with tourists, the Antones and many women in Gu Achi, Gu Oidak, Kom Vaya, and Quijotoa have been asked to make as many as possible. These orders for specific shapes have had two effects: women who might otherwise make a great variety of shapes are required to make the same shape over and over, i.e., there is an artificially stimulated specialization in shapes; and second, a shape that might otherwise be made by only one or two families is ordered from families in several villages. So today the Arts and Crafts Board and trading posts are directing the channels into which the shapes will flow. Fortunately there are still enough basket makers who do not trade through the Board for one to get an idea of the shapes that the women will make of their own accord. These women put more ingenuity into the shape than any other feature of the basket. The collection of split-stitch

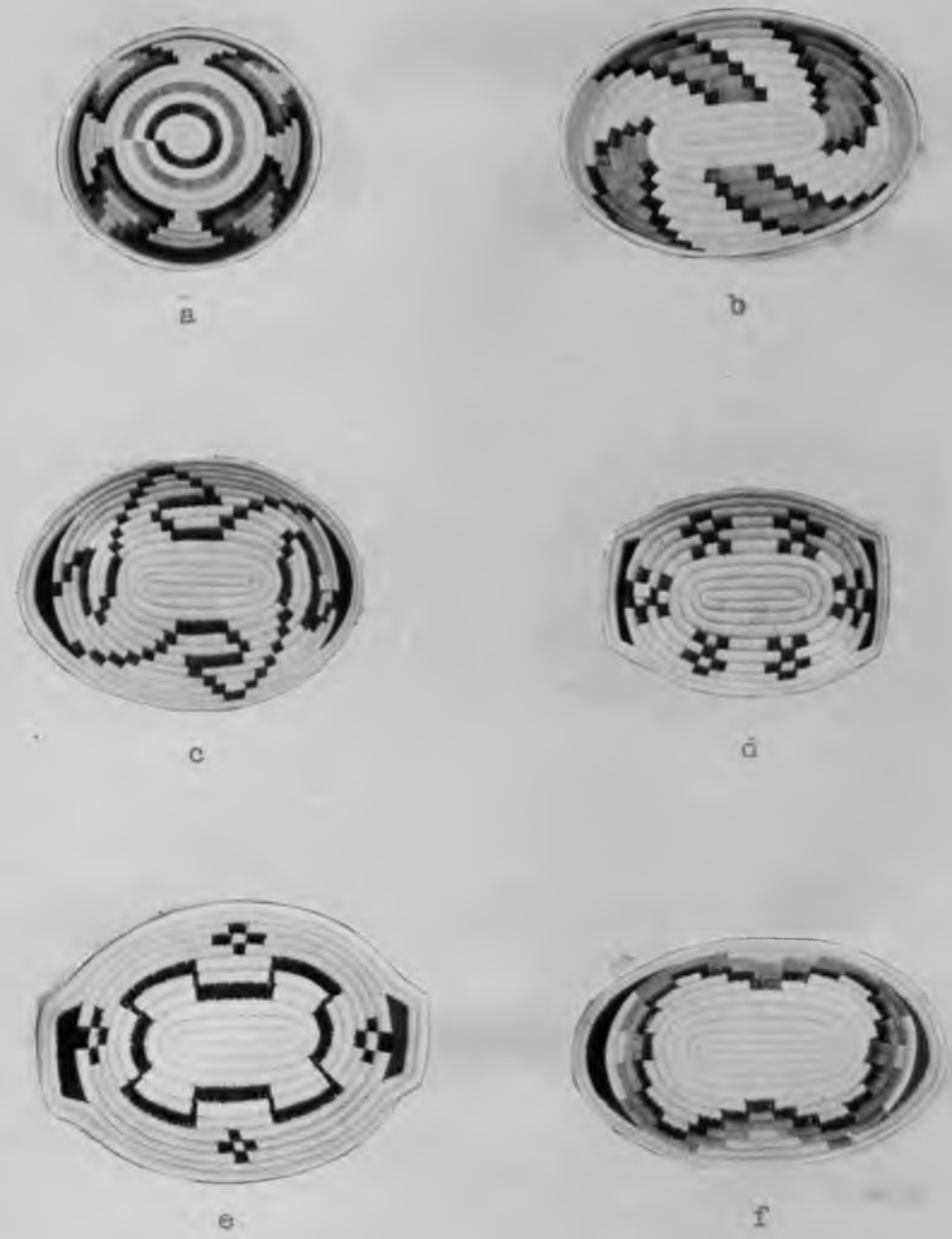

Figure 31

Commercial "bread tray" baskets
Bought by the Papago Arts and Crafts Board

a- 3.7 cm. high; 25 cm. in diameter
b - f- In proportion to a

baskets is representative of baskets made without any influence from the Board; however, the greater variety of shapes in the split-stitch baskets may also be due to the lack of a colored design in these baskets.

In summary of the shapes which a basket maker will use, it can be said that materials and shape are the two features of the basket most closely correlated with use. In aboriginal times the deep bowls were used for wine, the shallow bowls for winnowing seeds, the olla shaped baskets for storage, etc. Then when the use of a basket became "for sale", the women made shapes to fulfill the white man's needs rather than retaining their old shapes. The result was such shapes as wastepaper baskets, trinket baskets, hot mats, and the other shapes discussed above. The purpose behind these many shapes is twofold: to copy something that is attractive, and to make things that the tourists like so that they will get fair prices for the work they have done.

TABLE II, Part 1

Modern basket shapes

DIMENSIONS						PROPORTIONS			
	Diameter				Depth		Max. Diam. to depth		Max. to Minimum	
	Maximum		Minimum							
Shape No. (1)	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median
1-			10-40	18						
2-8-33	*		7.0-33	*	1-3	2.3	7:1-17:1	*	1:1-7:8	9:8
3-3-40	12		3-39	10.6	3-75	6	5:1-4:5	2:1	1:1-7:5	9:8
4- 5-40	15		3-32	10	3-19	6	1:8-2:3	1.6:1	7:5-1:3	2:1
5-12-60	*		4-25	*	7-25	*	4.2:1-2:1	3:1	5:3-4:1	2:1
6- 14-47	*				5-25	*	4:2-2:1	7:4		
7- 10-40	23				2-9	7	3:1-5:1	3.8:1		
8) 4-30	13		3-13	7	3-23	8	4:3-3:1.5	2:1	3:1-3:2	2:1
9)										
10-5-15	9		3-10	5	3-11	7	5:1-5:7	5:3	5:3-3:1	2:1
11-16-52	*		8-40	*	3-21	*	5:1-5:7	5:3	5:4-7:2	7:5
12-10-30	20		0-11	6	10-25	18	1:1-6:5	9:8	3:1-	5:3
13)										
14) 10-38	*				12-45	*	5:4-5:7	6:7		
15)										
16)										
17-Novelty										
18-8x7.5 to 30x24	14x11		10x7 to 34x24	15x11	4-10	6	5:1-2:1	3:1	1:1-7:5	119
19-9x6 to 25x18	14x9		7x6 to 20x16	11x8.7	2-18	7	5:3-9:1	6:3	7:5-5:2	5:3
20-26x22 to 33x21	28x20		21x20 to 28x22	24x18	1-5	2.5	14:1-8:1	12:1	6:5-8:7	7:6

(1) - See Table II, Part 2

* See text

TABLE II, Part 2

	SHAPES	Close-stitch willow	Close-stitch yucca	Spaced-stitch	Split-stitch	Total
Round						
1		4%	8%		14%	7.5%
2		4	6	1		5
3		23	49	38	15	39
4		17	18	14	2	15
5		5	2			2
6		27	1			2.5
7		12			.8	.7
8			.7	7	5	1.5
9			.8	5	15	4.3
10			.7		4	1.2
11		2	.4	3	3	1.3
12			.3	14	.7	1
13			.1		3	.8
14			.5		2.5	.9
15			.3		.5	.3
16			.3			.2
Oval						
17		6	4.5	13	28	10
18			.3	1		.2
19			6			3.5
20			1		3	.8
21	Novelty		1	4	3.5	2.2

Decoration Methods

Designs

Materials

On all domestic baskets and nearly all commercial baskets, the decoration is obtained primarily by substituting colored binding elements for willow or yucca. Of the materials used for obtaining color plant products are the most popular, and of the plant products used, black martynia strips are by far the most popular. Martynia exclusively is used for domestic coil baskets, it is used for approximately eighty-nine percent of the commercial baskets (see p.66 for collection and preparation of martynia). The use of martynia for black designs is not confined to the Papago, for it is used by the Pima, Maricopa, Apache, Navaho, Yavapai, Walapai, and the Shivwits Paiute.[1]

After black, the next most popular color on yucca baskets today is green (Fig 33c). In modern baskets it is used by itself occasionally, and with black martynia in about 7% of the baskets. The green is obtained by sewing with the outer leaves of the yucca elata. In collecting these leaves the woman selects those that are a clear deep green and cuts them one by one from the plant. After collection, they are prepared for use in the same way as the

1 Drucker, 1941

white yucca, except that they are laid in the shade instead of the sun to dry. (However, the outside leaves are so much darker green than the inside ones that it takes about three times as long to bleach if laid in the sun). According to basket makers, the use of green yucca is recent. "We started using green sometime after we began to make our baskets with yucca, probably about twenty-five or thirty years ago" (R.P., J.A., A.C.P. and J. N.). Today it is used sporadically throughout the Reservation.

The red color seen in about four percent of the modern Papago baskets is made by sewing with the inner bark of the root of the Spanish bayonet, yucca, or desert willow. One informant said that "They sometimes use the bark from the twigs of the 'manzanita'" (A.C.P.). The popularity of the Spanish bayonet or yucca root is about equal, depending upon which is more accessible to the basket maker.

The only examples of desert willow came from the village of Anegam where it grown in abundance. (The translation of Anegam is "where the desert willow grows") (Fig. 33d).

The only seasonal requisite for collecting any of these roots is that the ground be damp, for then the roots are easier to dig, the outer bark easier to peel off, and the inner bark more pliable. To collect the yucca or bayonet roots the basket maker uses a pick and a knife to knock

a

b

c

d

e

Figure 32

Collection and use of the inner bark of yucca root

a- Yucca Arizonica McKelvey
b- The first step in collecting the roots is to knock off the top of the plant.
c- The exposed roots are then cut off.
d- The inner bark of the roots are wound into a ring to await use.
e- Basket with the design made of red yucca root bark. (16.7 cm. high; 29 cm. in diameter)

off the top of the plant, thus leaving the tuberous roots exposed (Fig.32). She then pulls out the tubers and cuts the long roots off. Her first step in preparing the roots is to pull off the casing; her next step is to insert a knife or an awl in the exact center of the root and split in half. If the root is unusually large she will split it twice, using the two outside pieces and discarding the center piece. After she has split the roots she winds them in a ring about 15 centimeters in diameter and puts them away without drying. When she is ready to use some of the red in her design she lays the splints in the ground a few inches under the surface and dampens the ground. She leaves one end of each root sticking out so that when she needs a piece she just pulls it out of the ground, wipes it off on a rag, and uses it. Yucca root splints cannot be soaked in water because the red fades and when it is sewn with bleached yucca it leaves a pink smear.

The root of the desert willow has to be boiled before using. The resulting color has an orange caste, whereas the yucca root is a deep maroon.

The earliest example of the use of root bark was seen in a yucca basket bought on the western part of the Reservation in 1912. Today it is used frequently in Chiawuli Tak,

Pan Tak and Koson Vaya and occasionally in Gu Achi, Quijotoa and San Xavier.

Among the Papago there has been a very limited use of dye to alter the natural color of the plant fibres. The earliest known examples were made around 1920. At this time one woman used a green and orange-red aniline dye. Another woman who had just returned from Magdalena made a basket which was a copy of the highly colored Mexican baskets. (She was so discouraged by a potential buyer that she did not try it again. F.S.H.). There was a sporadic occurrence of dyes until about four years ago when one of the traders on the Reservation induced women to use pastel dyes. This idea did not gain permanent popularity because the Arts and Crafts Board and other traders vigorously discouraged pastel dyes. With a few exceptions, the attempts to keep the women from using artificial coloring has been successful; however, a woman has to be reminded occasionally to use good black martynia rather than to doctor up pale martynia with shoe polish! A few baskets from Kupk, Pisinemo, and other villages seldom contacted by the Arts and Crafts Board are made with dyed splints. One woman who had just made a basket with a purple design said "I was dyeing an old dress purple and thought I would put some cottonwood in the dye to make

a basket (M.L.). Since one trader sells about $85 worth of aniline dyes each year (R.), it is amazing that more women haven't done this.

Another material used occasionally for designs is mercerized cotton embroidery yarn! The first known examples were made by Tilly Puffer of Stoapitk about five years ago. The first time she used it she had run out of devil's claw and had put in the black yarn to finish her basket (R.). Shortly after that she made several other baskets with either solid yarn or yarn mixed with devil's claw. Tilly died about 1939 and no more yarn baskets were seen until the fall of 1941 when Cecilia Orasco made a flower design on a plaque with red, green and yellow yarn "to see how they liked it." (Anita Pablo didn't like it! (Fig. 33a).

Then a few months later another basket was made with a stepped design in red, green and orange yarn. When the maker was asked where she got the idea she replied "A relative of mine made one like that and I thought it was so pretty I wanted to make one" (M.M.) (It turned out that this relative was a cousin, Cecilia Orasco). The Arts and Crafts Board has kept these two baskets well hidden for fear someone else will think yarn is a good idea.

Figure 33

Commercial baskets showing materials used for decoration Bought by the Papago Arts and Crafts Board

a- Plaque made of yucca with design of mercerized cotton embroidery yarn. (10.7 cm. in diameter)
b- Basket made of devil's claw with design of yucca. (3.7 cm. high; 13 cm. in diameter)
c- Basket made of yucca with design of devil's claw and unbleached yucca. (42 cm. high; 41 cm. in diameter)
d- Basket made of yucca with design in devil's claw and desert willow root. (8 cm. high; 11 cm. in diameter)

The use of yarn involves one change in technic, for instead of inserting the sewing element through an awl hole, the yarn is threaded on a needle and actually sewn through the coil.

Only one example of bead decoration was reported. Anita Pablo's mother had a basket used in her wedding ceremony which had blue beads sewed around the rim. Anita does not know whether this basket was made by a Pima or a Papago.

Absolutely no indication was found of painted designs, despite the following observation made at a wiikita ceremony:

> "The leader carried in the crook of his left arm a deep tray basket of Pima manufacture, about eighteen inches in diameter, painted white and black inside and out in alternate eights." [1]

To summarize the methods of obtaining color for decoration of baskets, it can be said that in aboriginal times the black devil's claw was the only material used. Then as they came in closer contact with outside groups the Papago saw the possibilities in color. Except for the natural plant materials basket dealers consider colored design un-Indian and have therefore discouraged their use.

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[1] Hayden, 1937, p.271 and Plate No. 5

Execution

Papago designs, whether they are very simple or very intricate, can be arbitrarily classified into four basic elements: color in alternate coils, in steps, in alternate blocks, or in an S (Fig.34). The basket makers recognize these four elements in a design; however, they do not seem to recognize the similarity between a design that is worked horizontally and one that is worked vertically because they think of the design in terms of the way it is made. For example, horizontal black and white stripes are made very differently from vertical stripes. Designs are usually worked in colored materials on a light background, but there are a few negative patterns in willow or yucca on a martynia background (Fig.33b).

Choice of elements

When a child makes her first basket she uses either simple stepped or cross designs because they are considered easy to make. Then after she knows how to make the simple designs her teacher leaves her alone and waits to see "what kind of a head she has for designs" (R.P.). The pupil may either make up her own designs or copy designs that she has seen.

The designs that the basket maker puts on her basket is subject to several limitations. The strongest limitation, of course, is technic, for the surface of a coiled basket

is literally composed of small rectangular blocks. Although the recent use of over-stitching has reduced the technical limitations to some extent, the majority of designs are still made by coloring certain combinations of the surface blocks. In addition to these basic technical limitations, there are limitations imposed by the variations in technic. One is a correlation between the design and the fineness of the coils and stitches. In the average yucca basket a design 10 centimeters square is composed of fourteen coils and 336 stitches. In coarser baskets there are fewer coils and stitches, and in the very fine baskets there are from three to four times as many. This means that the structure of the design can be made less and less obvious and the design itself more intricate, the finer the stitches. (This can be seen by comparing Fig. 36o with the other design on Fig. 36). In the same way there is a correlation between the size of the basket and the intricacy of the design, for a certain design requires a minimum number of coils for execution. In a small basket with fine stitches, this design could be executed in say 5 square centimeters, whereas in a coarse basket it would require around 25 square centimeters for the same design. One of the reasons for such a high percentage of simple designs requiring only from three to ten coils is that the great majority of modern baskets are small with medium to coarse coils.

There is also a certain correlation between the shape of the basket and the design that can be put on it. A basket of considerable height is more suitable for the sahuaro cacti, vertically interlocking S figures, and some fret designs (Fig. 40 d,f,g,k, & l); a basket whose rim diameter is greater than its base diameter is more suitable for a horizontal design (Fig.35 to 39); a very shallow or flaring basket is most frequently used for a design which is put in the bottom of the basket (Fig. 42, l, m, and Fig. 43 j); and an oval basket is the most adaptable to a design which is composed of two different elements (Fig. 31f).

Still another technical limitation is the nature of the materials which the basket maker has. One of the best examples of this limitation is a basket design which a woman was given to copy. The resulting design was basically similar, but lacked a black center and the alternate black rows between the elements. When questioned, the maker answered that " I do not have much devil's claw" (C.J.) (Fig.44).

There is only one manifestation of socially imposed limits on designs, namely, not using a design which is considered the property of another woman. The motive for this limitation is apparently fear that the woman whose design she copied would disapprove (E.C.).

Papago designs fall into three classes: universal designs which are used over and over again on every part of the Papago, and even the Pima, Reservation. The commonest of these universal designs are shown in Figure 35a, 36 a, b, d, g, and i; other universal designs not having quite as frequent use are shown in Figure 35 b-s, 36 b, c, d, e, l, m, 40 b-l, 41 a-l. The second class of designs includes those that a woman originates, uses only once or twice, and does not consider her property. Some of these are shown in Figure 37 & 38. Bird, animal, and human designs probably fall under this class, for although no two women make their life forms exactly alike there is enough similarity between them to conclude that the majority are individual variations Figure 42 & 43). However, some of the life forms do fall into the third class of designs, namely, those that are considered the property of one woman and used over and over by her. The best example of this type is shown in Figure 42 l. Since there is such a demand for these owls and only one woman (C.J.) makes them, the Arts and Crafts Board has asked other women to make them. The answers were: "Won't turtles do?" (E.C.), "I would rather make something else, that lady wouldn't like it because it is her design" (D.C.). There is even more definite evidence of copyrighted designs among the Pima.

Whatever ceremonial limitations there may have been on design usage is now forgotten.

The part that aesthetics play in the choice of designs is best realized by looking at the designs themselves, both the elements and the arrangement, because aesthetic value depends upon the judgement of the individual. The Indians seem to have fairly uniform taste regarding the beauty of a design but they have varying ability to make designs. The variations in the ability of women to choose pleasing designs is well expressed by the Papago when they say that a certain woman has or has not a "good head for designs." It is the woman with a good head for design who will copy or make up a very pleasing design; it is the woman with a poor head for designs who will make unattractive and badly balanced designs if she breaks away from the very simplest patterns.

After choosing the design within the limits of these technical, social, and aesthetic considerations the basket makers next problem is the actual construction of the design in the walls of her basket.

Construction of elements

In a willow basket the maker usually makes the entire bottom of devil's claw, and starts the design by putting in willow for the background and carrying the black design directly from the bottom (see Fig. 17). In a basket with

a curved bottom the beginning of the design is arbitrary. She may begin it in the center and make a circular design or may not start her design until she has sewn several white coils. However in a basket with a definite turn from the bottom to the side, the design is always started directly above the point where the coil turns from the bottom to the side. Usually this is about two coils from the bottom, but varies considerably with the size of the basket. When the design is composed of discontinuous elements, the basket maker simply builds up her design as she coils around, ending the design on the elements to the right of the one on which she started. When the design is composed of continuous elements, she has to cope with the spiral of the basket. She does this by adding one more row of color on the next to the last line of the starting element, so that the element on which she started is also the one on which she ends her design.

In all designs except the alternate rows of color, the basket maker must consider the spacing of elements in the construction of her design. When a person first learns to make a basket the teacher will show her where to put her stitches, but soon the pupil must be able to place her own design sections. This is done, not by counting stitches, but by measuring. Counting is impractical for two reasons: first, the Papago language has figures up to ten; anything

over ten was "many" before they adopted Spanish numerals; and second- the width of the sewing strips and the spacing of the stitches vary so greatly that in one place five stitches will constitute a centimeter of design, and in another place only three stitches will be needed. The measuring is done by using a piece of willow or yucca as a yard stick, marking the spacing with the finger or by using the hand. By the time a woman has made many baskets, she can judge the distances without measuring.

The number of times the design elements are horizontally repeated in a basket is apparently of little importance, for the same woman is not consistent about the number she uses. In all the close coil baskets made during the period under consideration 10% had three elements, 55% had four, 22% had five, 13% had six, and 3% had seven or more. Four elements are reputedly easier to get right, which probably accounts for the higher percentage of four elements rather than any association with the ceremonial number four. When asked if there was any association, informants only laughed and said "no" (A.C.P. and R.P.).

In the case of a simple arrangement of parallel vertical elements the number does not appreciably alter the effect of the design (Fig. 34 f & 49). In the case of diagonal elements, the number does effect the finished

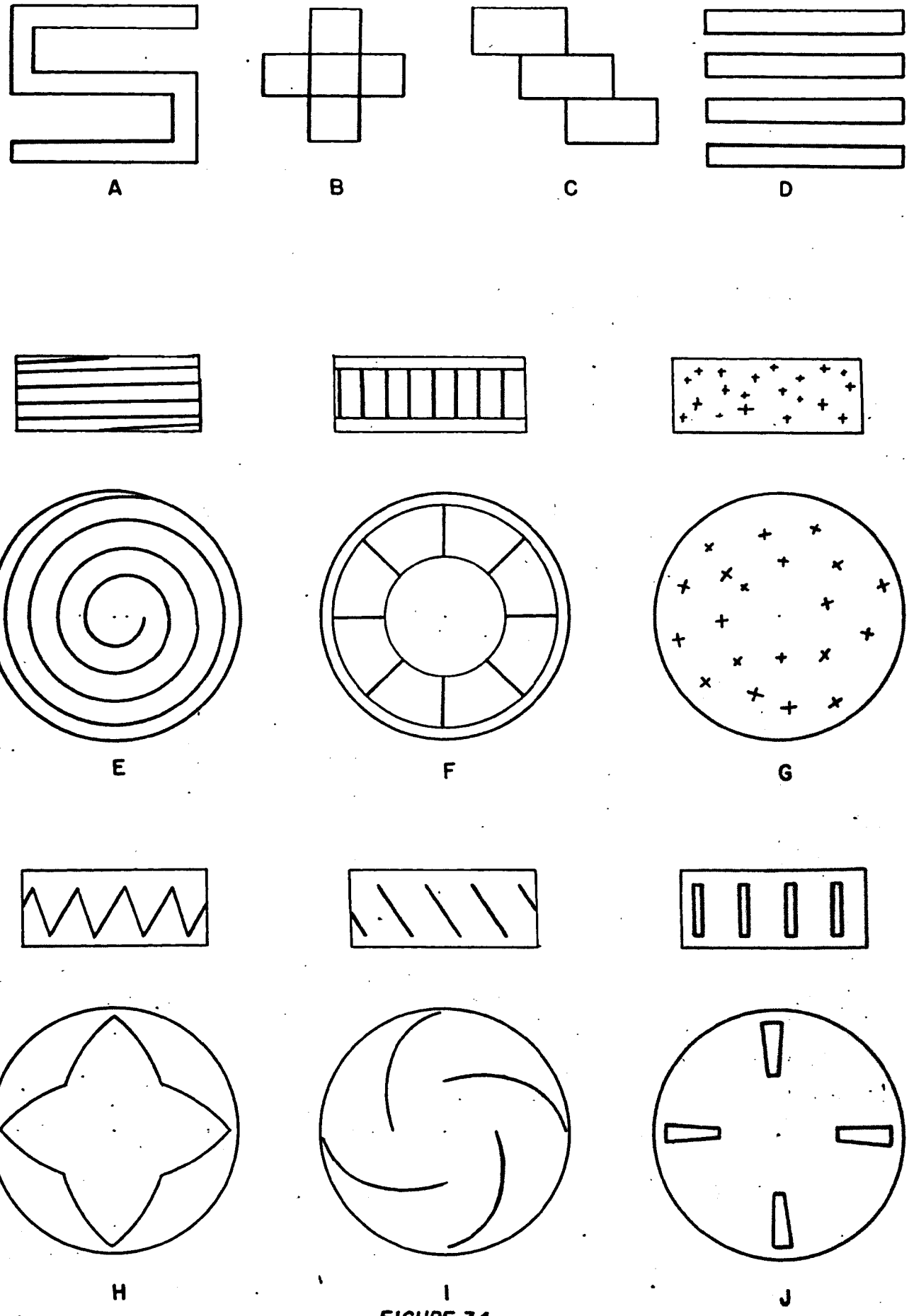

FIGURE 34

A-D : BASIC DESIGN ELEMENTS
E-J : ARRANGEMENT OF DESIGNS ON MODERN COILED BASKETS

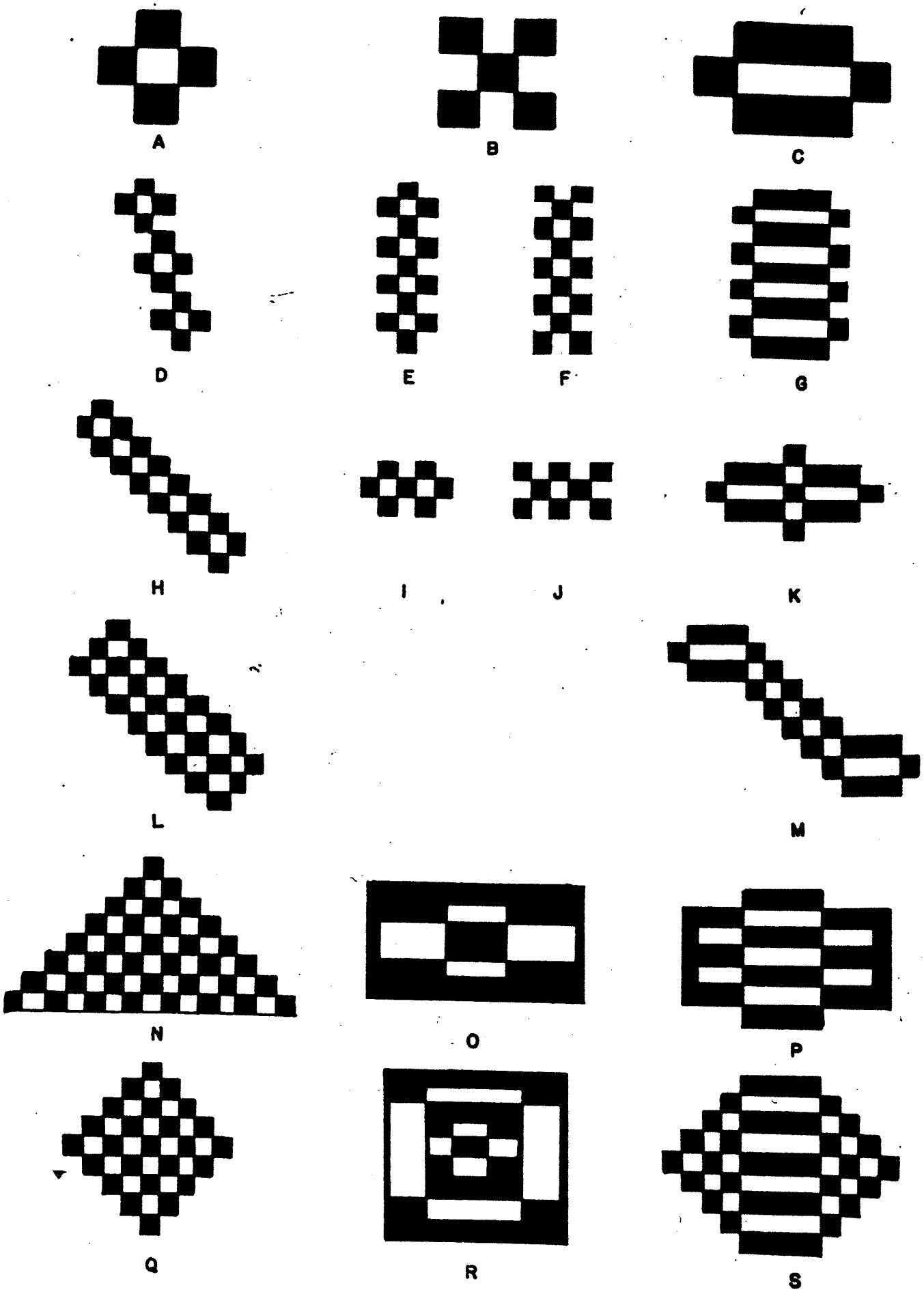

FIGURE 35

DESIGNS

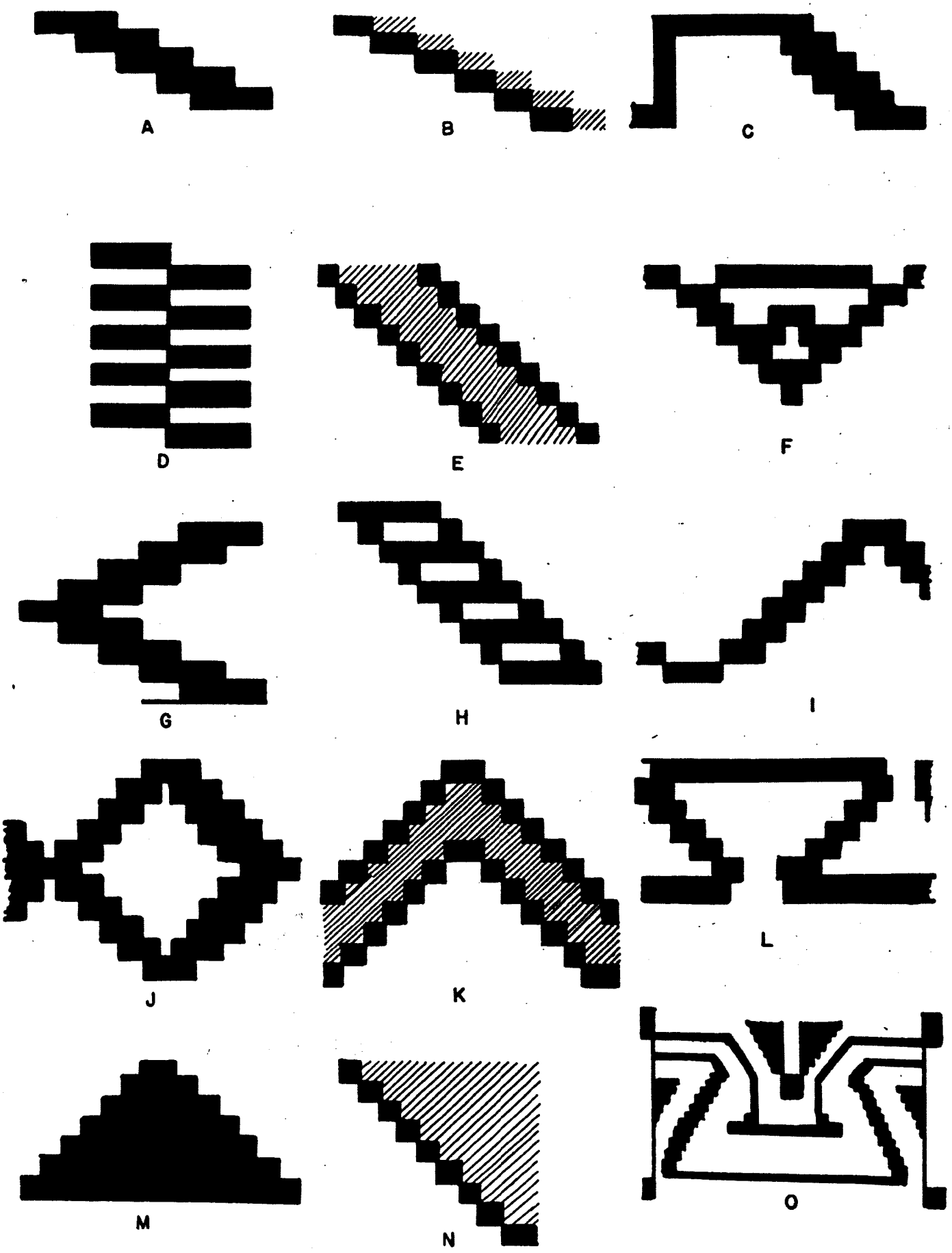

FIGURE 36

DESIGNS

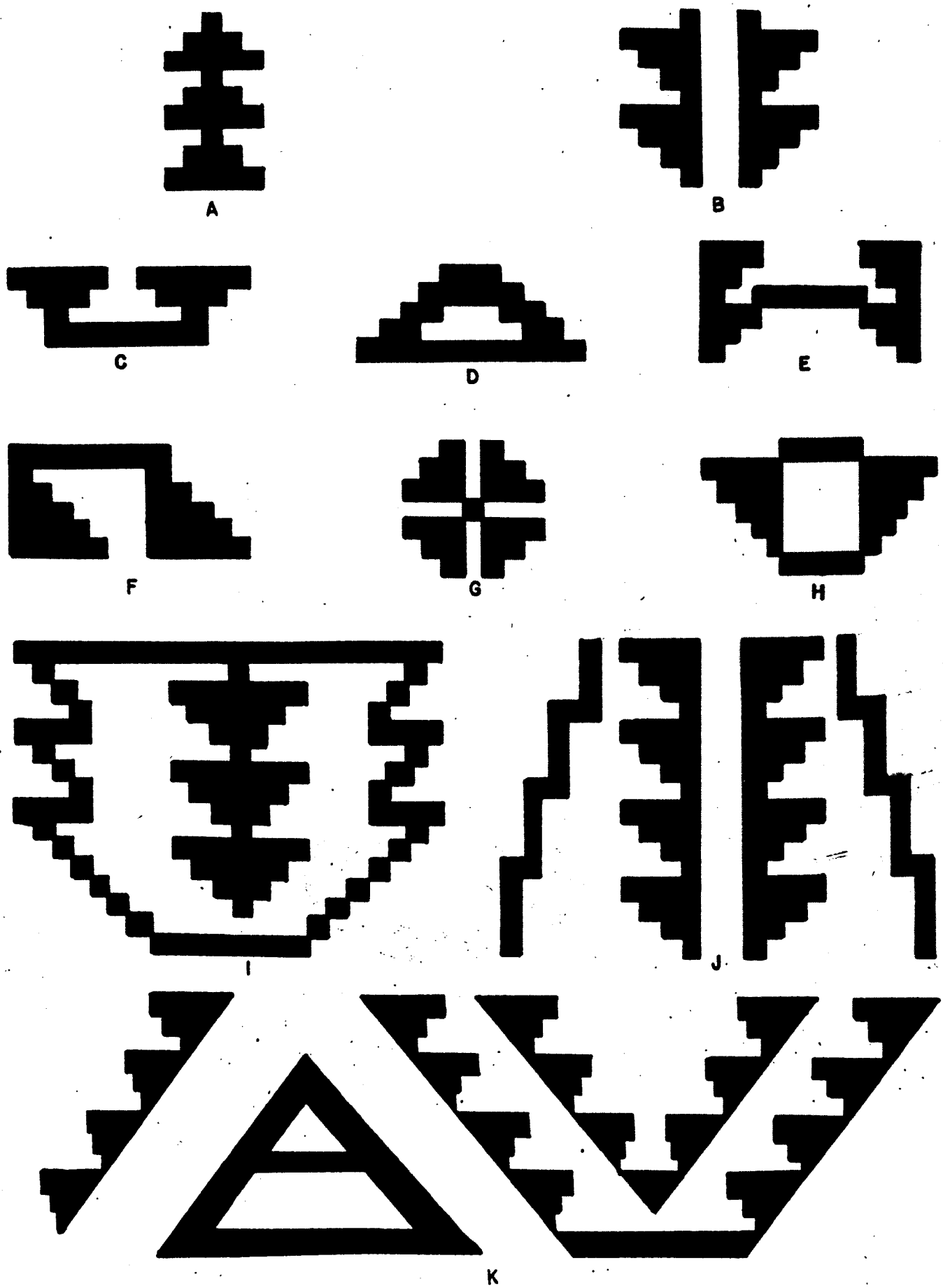

FIGURE 37

DESIGNS

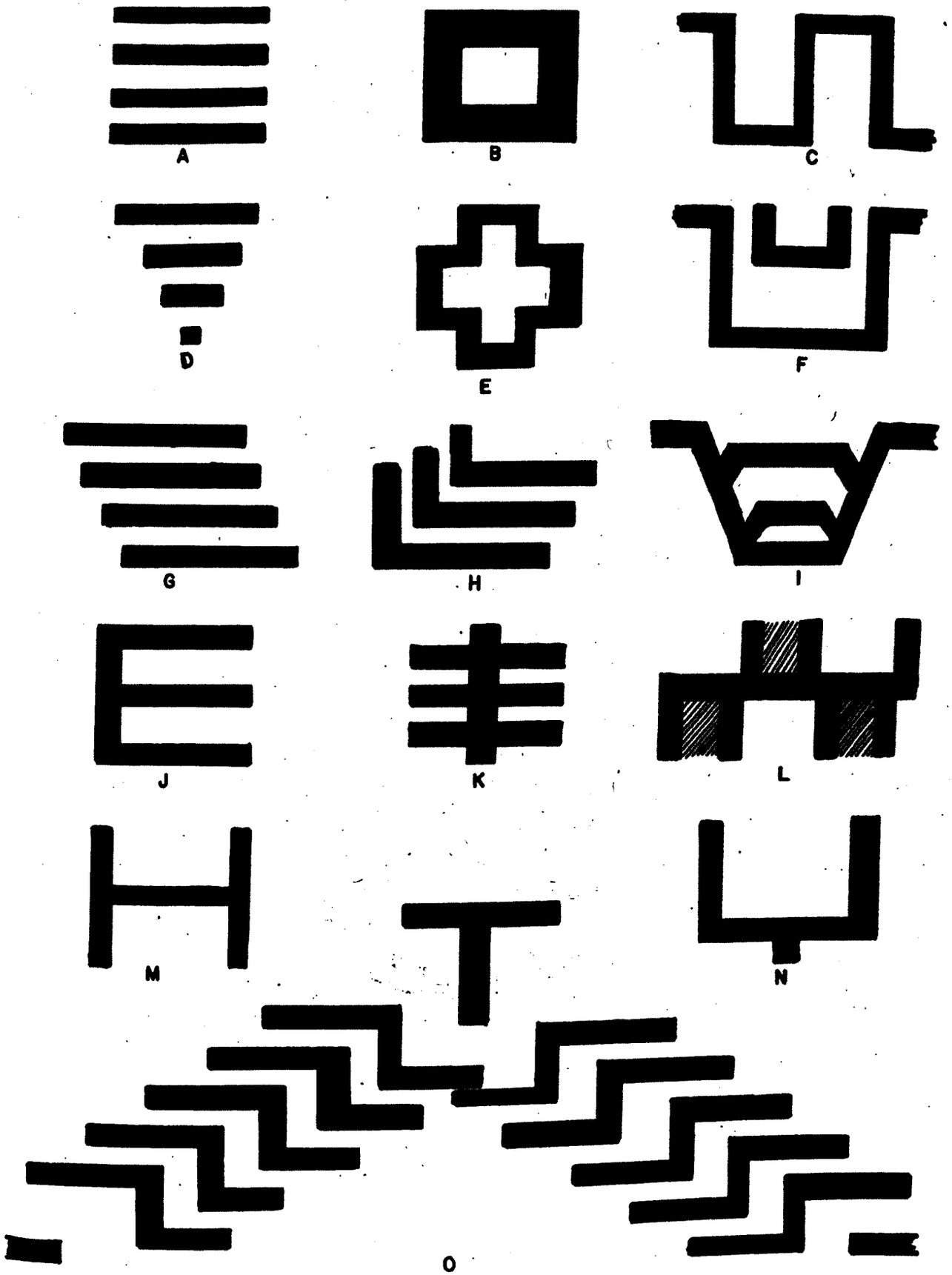

FIGURE 38

DESIGNS

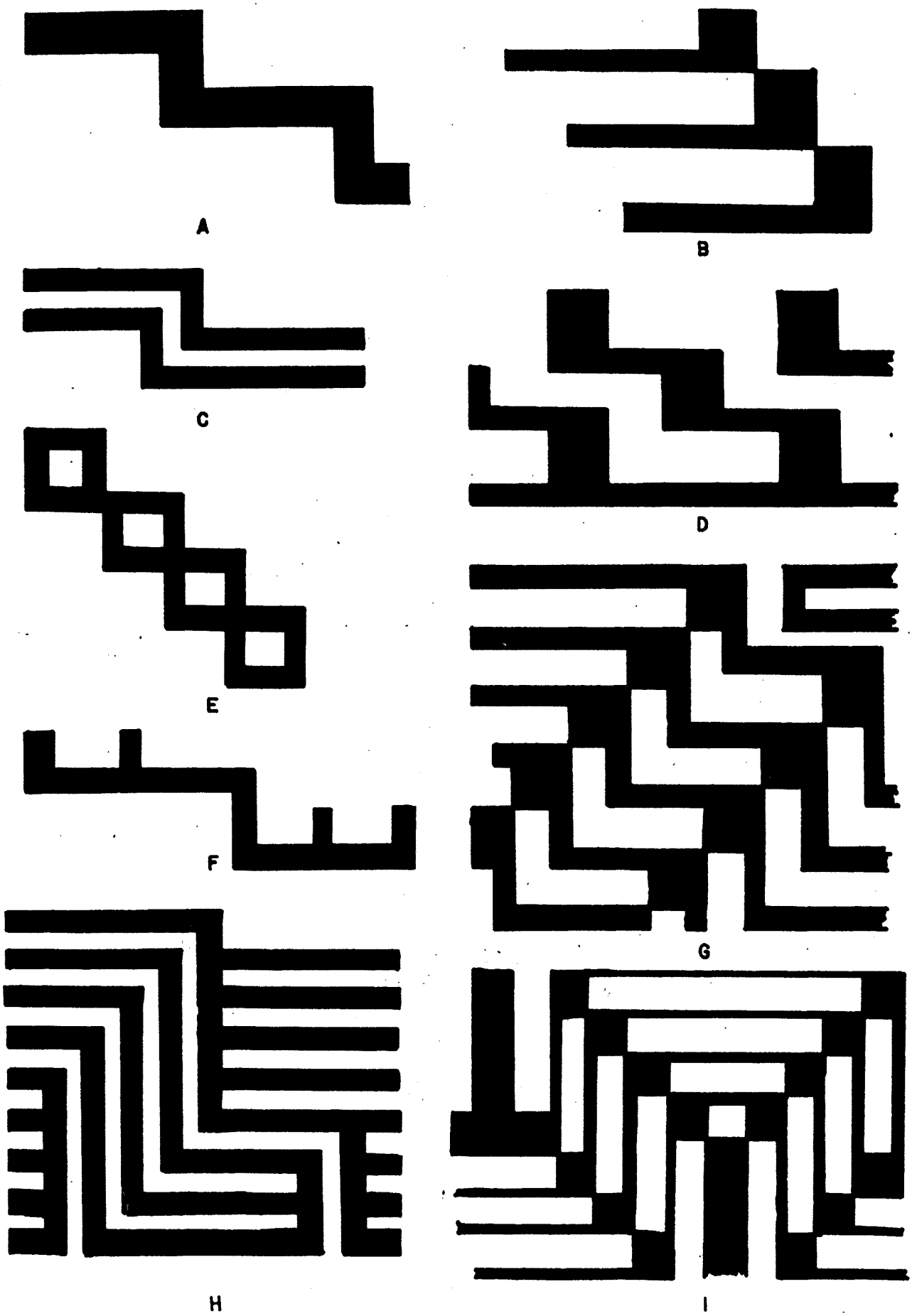

FIGURE 39

DESIGNS

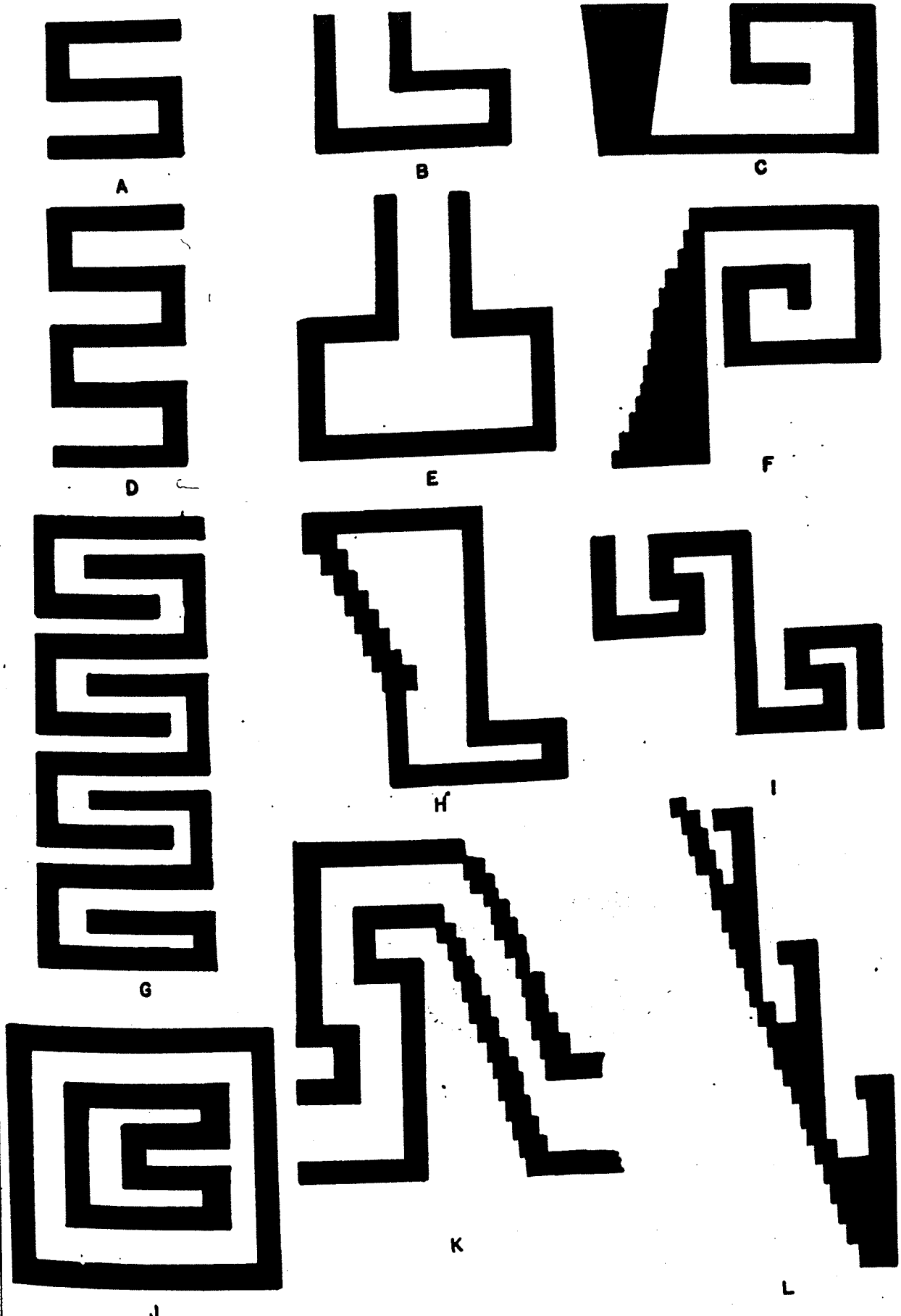

FIGURE 40

DESIGNS

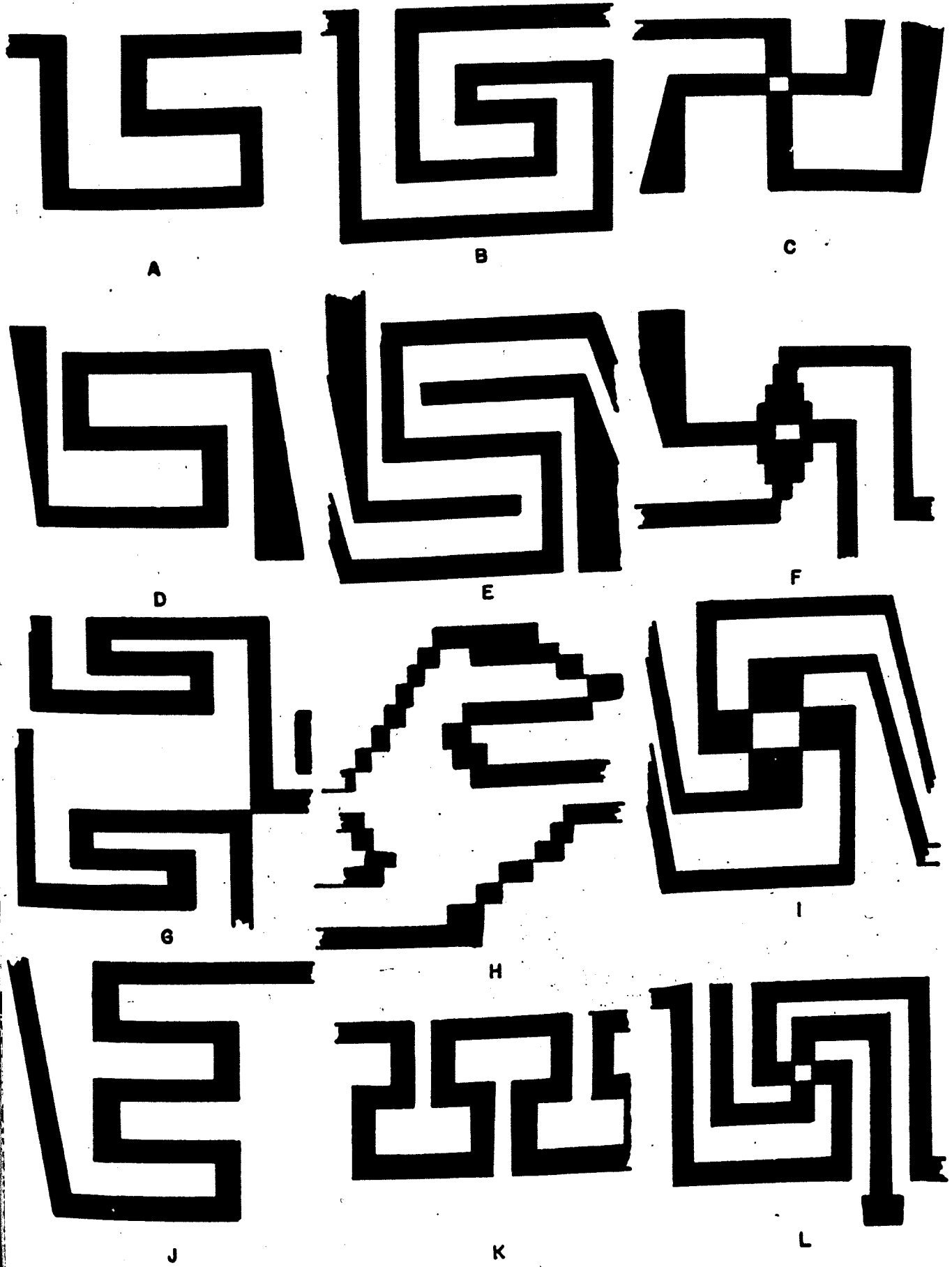

FIGURE 41

DESIGNS

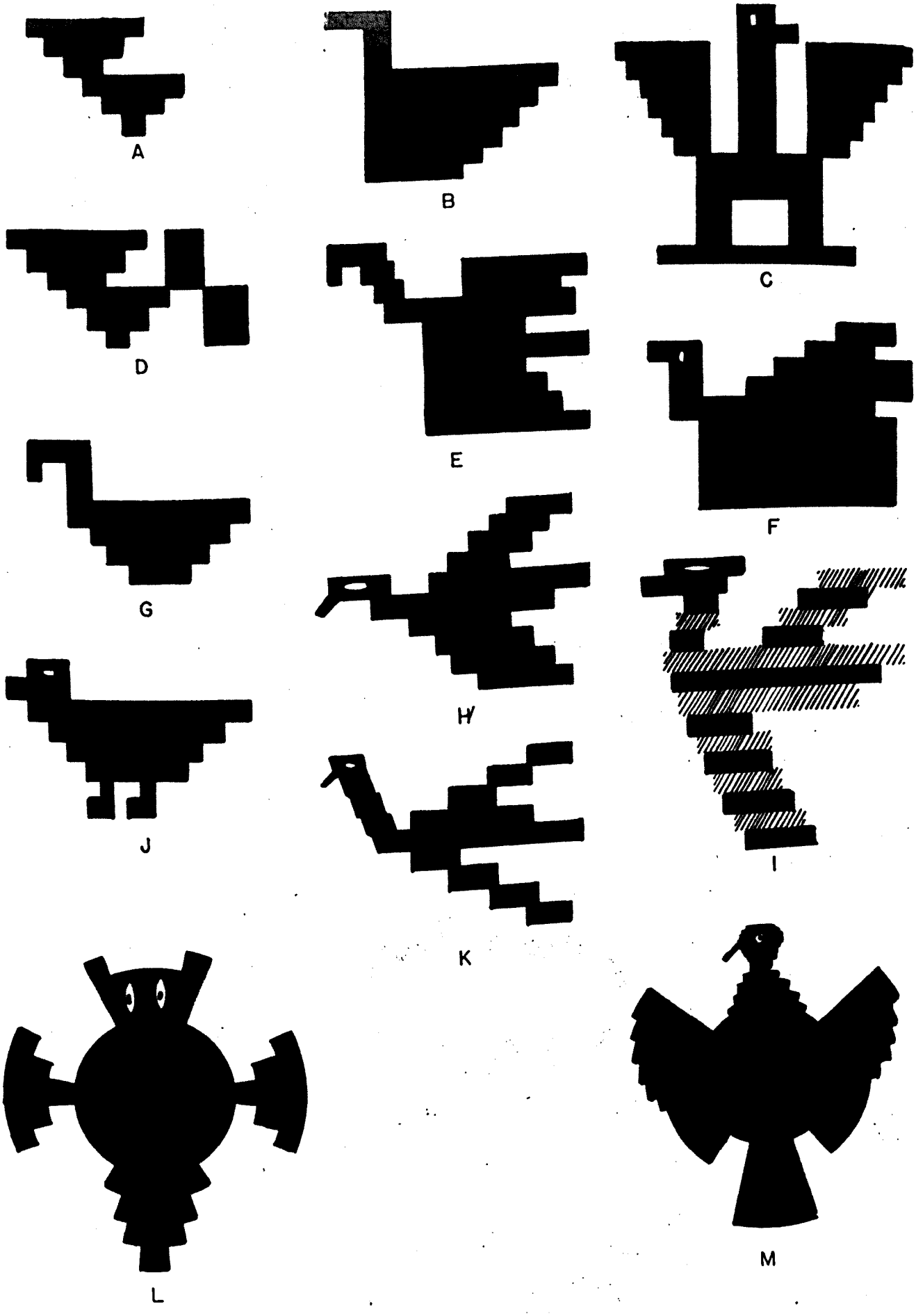

FIGURE 42

DESIGNS

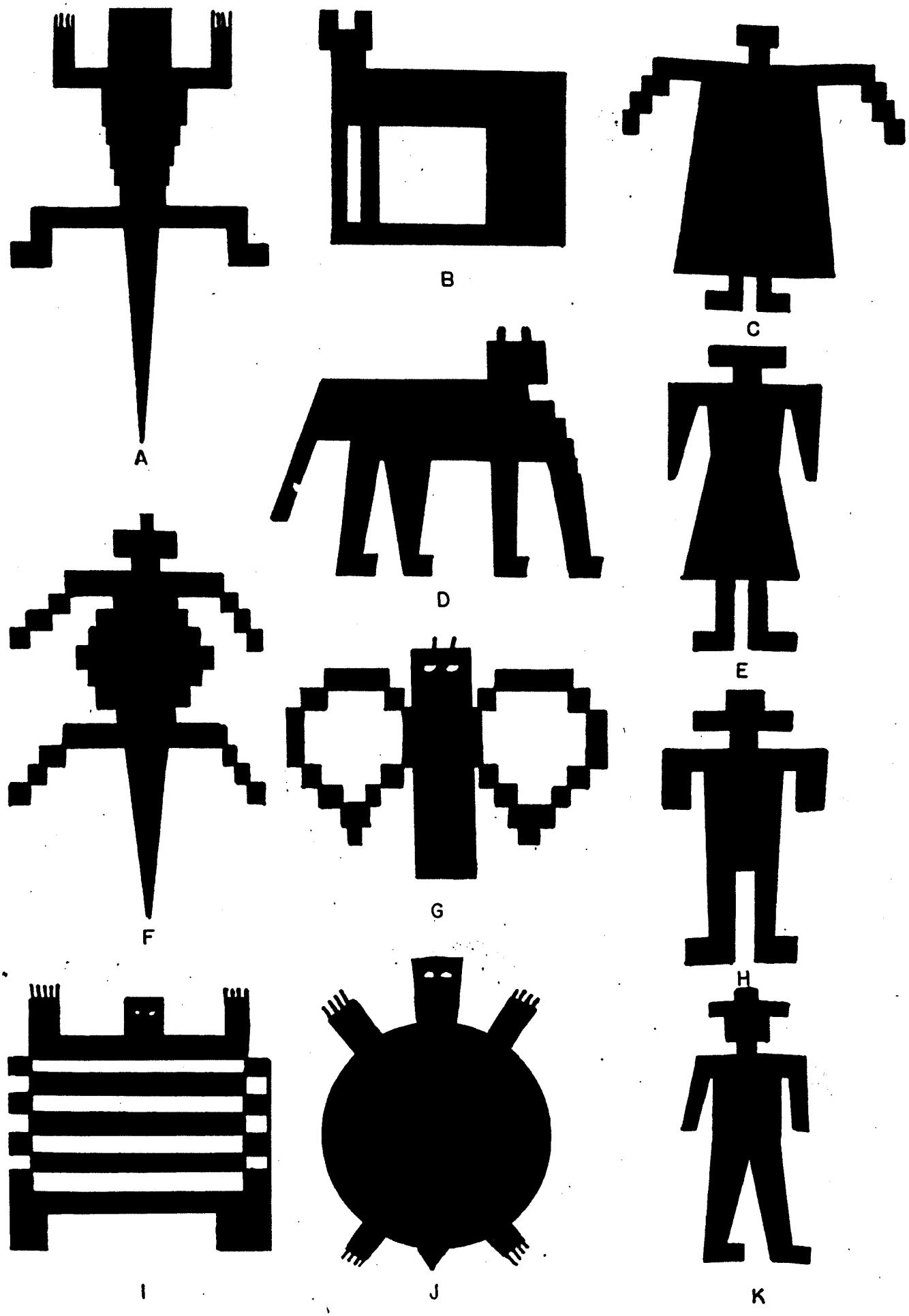

FIGURE 43

DESIGNS

product, for three, four, or five elements give the effect shown in Figure 28a & 34i,, but more than five or six elements overlap vertically, giving the effect of a series of parallel horizontal bands (Fig. 51b). In the case of intersecting diagonal elements, whether the space between is filled in with color or not the result is a rosette (Fig. 34 h), which will have from three to nine petals. Continuous fret designs run from three to seven or eight elements, depending mostly upon the fineness of the coils and the size of the basket, and always give the same effect (Fig. 34 f). A helter skelter arrangement (Fig. 34 g) is quite rare.

The number of elements the basket maker puts in vertically depend mostly upon the size of the basket except when two continuous frets are mirrored, one above the other. The area of design in proportion to the area of the field is not consistent enough to be a diagnostic.

Variations in the choice and execution of designs on baskets as they appeared in the past and as they appear today are individual variations. However, there are certain differences between the designs of commercial baskets and those of the domestic baskets. One of these differences has its base in the utility of the basket. The eehuk is a much stronger fibre than the willow, therefore the bottom of the domestic baskets were of black, with the

design usually emanating from the black center. In the yucca baskets there is no need for strength, therefore the bottoms are of yucca unless the design itself is built up of the circular coils in the bottom in which case the motive is entirely decorative, not utilitarian.

Another change lies in the fact that the majority of Indians feel that the domestic willow baskets are a work of art, whereas the sale baskets are a commercial product. Therefore it is understandable why a woman would put more pains in making her willow basket than in making ten or twelve yucca baskets. Even in the baskets to be entered for competition for prize money at fairs, there is not the feeling that a design will make a basket a work of art.

The most outstanding changes which have occurred in designs are a result of the Papago's ability to copy from American's samples. Some examples of the copying of designs will give an idea of the extent to which it has, and is, being carried on: In 1897 a woman made a basket with a design which was an exact copy of the design and lettering on a Silver Leaf Lard can (See Fig.45 a). The maker of this particular basket did not know how to read or even understand English (F.S.H.). Around the same date another woman made a design by copying the flowers in a piece of carpet. A real fad in "designs" started about ten years

a

b

c

Figure 44

Results of copying designs

a- The original (8 cm. high; 32 cm. in diameter)
b- Copy made by Clamian Juan (22 cm. in diameter)
c- Copy made by Martha Thomas (6 cm. deep; 29 cm. in diameter)

a

b

c

c

Figure 45

English words used for designs

a- Willow basket obtained by Mrs. F.S. Herndon about 1890. (6 cm. high; 22 cm. in diameter)
b- Willow basket made for Mrs. F.S. Herndon about 1910. (1.5 cm. high; 11 cm. in diameter)
c- Yucca basket made for the Papago Arts and Crafts Board. (5 cm. high; 24 cm. in diameter)

ago when an Arizona hotel ordered several souvenir baskets bearing the name of the hotel. Regardless of discouragement, there are still women who think that a lettered design is pretty, so PAPAGO ARTS AND CRAFTS BOARD, SELLS ARIZONA, ARIZONA BILTMORE, BAKING POWDER, and individual's names are frequently seen (Fig. 45). Lettering is nearly always a direct copy, without the slightest idea what it means.

Another design type attributed to whites by the early writers, but whose origin is now forgotten by the Papago, is naturalistic forms. Since they are found exclusively on commercial baskets it is highly probable that life forms are recent. The only indication of life forms on domestic baskets comes from Lumholtz:

> The natives (of Fresnal) had little to sell me beyond a fine basket used for harvesting sahuaro fruit. This kind of basket, which is now becoming rare, is of large size, water tight, and is carried on the head. Its decorative designs sometimes represent the sahuaro cactus."[1]

Although the majority of realistic figures are used alone or in geometric arrangements, few are supposed to tell a story. For example one basket decorated with pictures of a shauaro cactus, a man hiding behind the cactus with a gun leveled to his shoulder, a deer on the other side of the cactus and birds in the sky was a picture of "a man was hunting deer and buzzards were fol-

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[1]Lumholtz, 1912, p. 34

-lowing him to get any thing he killed and left behind" (Basket maker to R.).

The oldest basket seen, supposedly about eighty years old, had the design shown in figure 39 g & 16b on it. This is considered one of the old designs and is still very popular, especially for wine basket. The closely allied so called "squash blossom" design is also considered to be very old. In 1912 Russell reported that it was of recent origin:

> "Sala Hina, who is perhaps 70 years old declares it was unknown in her girlhood days".[1]

Does this mean that traits only 100 years old have acquired the reputation of being old, or that the Papago had it before the Pima?

The very fact that more women are making baskets today than previously lowers the average quality of the designs, for women who have not the head for designs can make satisfactory commercial baskets.

Overstitches

Although the main decoration on Papago baskets is obtained by weaving colored designs into the walls of the basket, some decoration is obtained by post-weaving stitches. That is, a third element is sewn over the weft elements constituting false embroidery rather than a part

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[1]Russell. P. 139

A

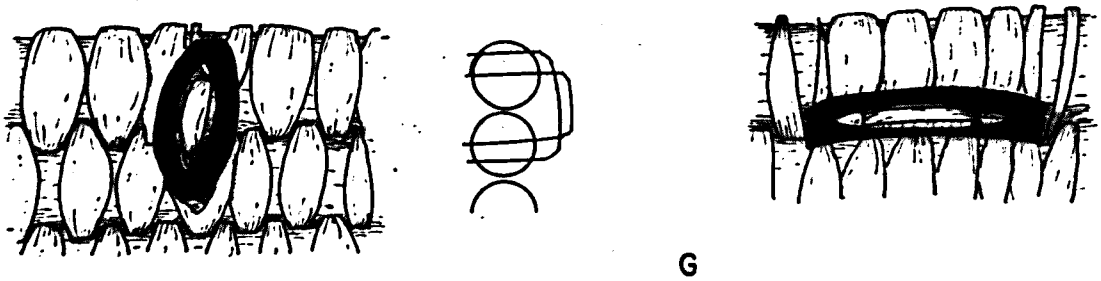
B

C

D

E

F



G

H

FIGURE 46

METHODS OF OVER-STITCHING

of the basket construction. These embroidery stitches are used for three effects: 1-strands sewn diagonally over the top coil of the basket, 2-strands sewn over the stitches of the coiled design to make eyes or narrow lines in addition to the built in design, and 3-strands stitched over the main warp to produce the outline of an entire design or figure. In all three types the materials used are the same as those used for built-in designs.

Of these types, the rim overstitching is the most popular (Fig.46). It occurs on many of the prehistoric baskets from the Anasazi region[1] (Figs. 7 & 9), and on Navaho, Apache, and Pima baskets. Among the Papago it is used on approximately 32% of all close-stitch yucca baskets, 62% of the willow, 14% of the spaced-stitch baskets and 6% of the split-stitch baskets.

Rim overstitching is accomplished in one of three ways: strands sewn through the top coil and over the top (Figs 46a & c), two strands crossed (Fig.46 d & e) or three strands plaited (Fig.46f). Of these methods, the single strand is the commonest on commercial baskets, and the three-strand braid is the commonest on domestic baskets. Two factors determine whether a woman will overstitch her rim: one is technical, for the devil's claw

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[1]Morris and Burgh, 1942, Figs. 7 and 9

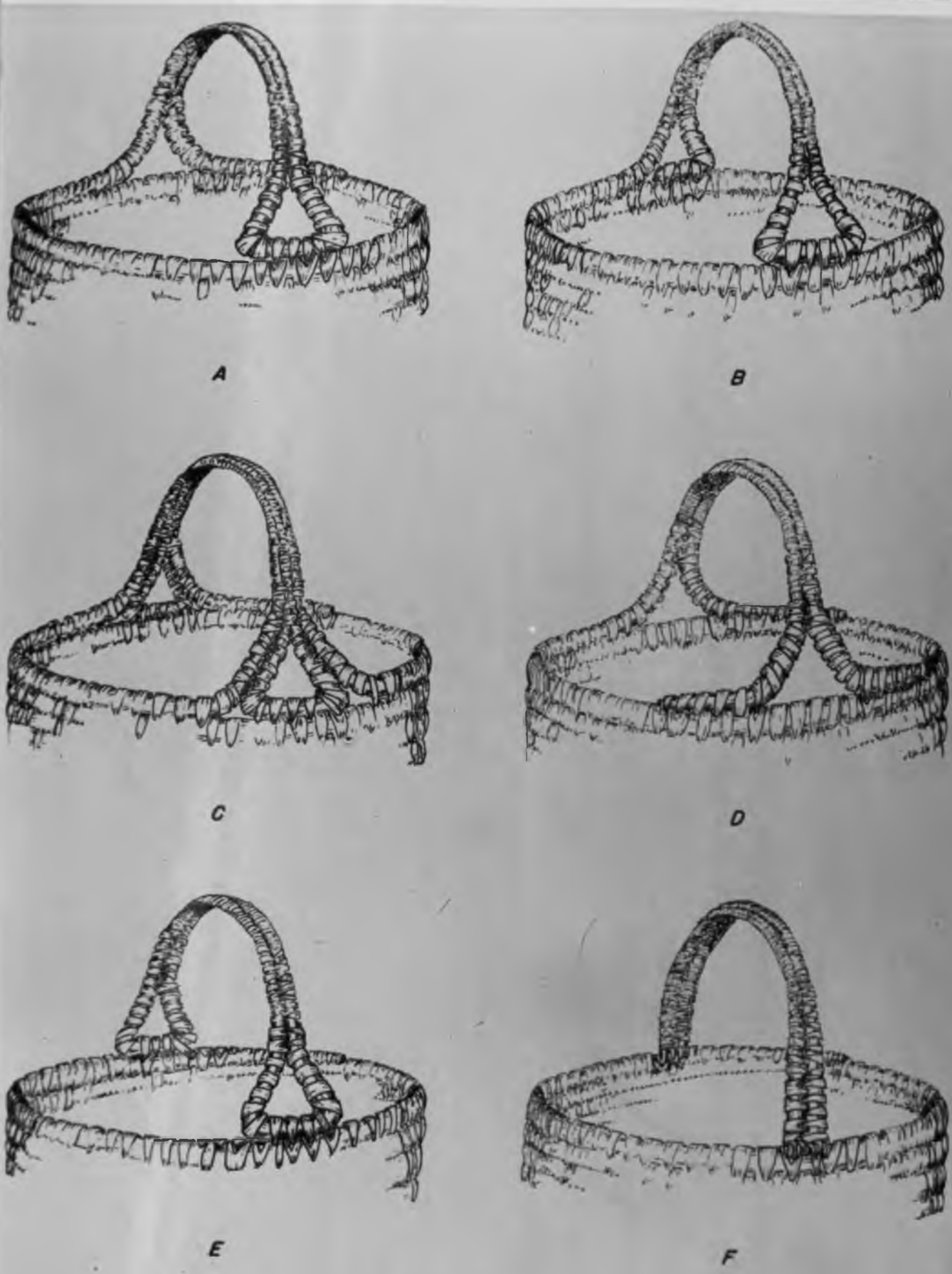

FIGURE 50

METHODS OF MAKING HANDLES

reinforces the rim, making the basket more durable, and one is aesthetic, for many women feel that a basket without the rim overstitching does not look finished (R.P. , A.C.P., & L. J.). The popular story that overstitching the rim is dictated by the maker's marital status is laughed at by the Papago, and I found nothing to bear out the supposed correlation except curio dealer's stories.

Inspired by Mathew's success with finding an origin story for over-stitches among the Navaho[1] an attempt was made to find out how long the Papago had been using the overstitched rim. The results were negative-"I guess we've always done that---I have never heard anything about it" (A.T.) and "The oldest baskets I have seen had it" (A.C.).

The second type of overstitching is better called false embroidery. It is a technic which occurs on very few baskets from other areas, and even among the Papago it is rare, being found on only 4% of the baskets examined, and all of those were close-stitch yucca baskets. This false embroidery falls into three categories:

1. In the construction of eyes (Fig.46 g & h) when a piece of yucca or devil's claw is sewn over the coil.

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[1]Matthews,1894, p. 205

Figure 47

Basket with a false embroidery design
Bought by the Papago Arts and Crafts Board

(6 cm. high; 26 cm. in diameter)

2. In the construction of narrow diagonal lines (Fig. 46h), when a long strand is literally sewn across several coils. It may be attached only at each end or tacked in several places. This is used in making bird's bills, sticks for collecting sahuaro fruit, or any other time when a narrow strip is required to complete the design or picture.

3. In sewing stitches horizontally between the coils to complete a design (Fig.47).

The earliest example of false embroidery was seen in the eyes of a bird made in 1916. When questioned about the age of embroidery, the women reply that they began doing that when they started making baskets to sell.

The third type of over-stitching, i. e., strand stitched over the coils to outline an entire design, has been used occasionally for lettering, but for outlining animal figures it occurred apparently for the first time in the fall of 1941. A woman from Quijotoa, Amelia Juan, made several plain yucca plaques, penciled the outline of owls, a cow's head, and a toad in the center of the plaque and embroidered over her pencil markings with devil's claw. The public accepted this style readily; however, Amelia felt that it took too much material and so she stopped making them. It's future development will therefore be interesting to watch.

Duplex Stitches

Sometimes when the basket maker wants to make al-

ternate stitches of black, green, or red and white she sews with two simultaneous elements. These duplex stitches are occasionally found on the top coil of a basket instead of overstitching (Figs.5c, 49e, and 51c) or in the design elements in the wall of the basket.

The only other examples of double stitching that have been described were found on Western Apache, Havasupai, and Basket Maker baskets.[1]

Wrapped Coils

Another decorative effect is obtained on baskets by wrapping coils. This technic was also developed in the attempt to make baskets more appealing to tourists, but it has never become very popular. The wrapped coils are made in the following way: after the basket maker has sewn part of the wall of her basket she stops attaching the foundation to the preceding coil and begins to wrap the yucca around the foundation; when she has wrapped several inches of the foundation she makes it into a loop and attaches it to the previous coil with three or four stitches; then she starts wrapping again, loops it, attaches it, and so forth until she has encircled the basket with a series of wrapped loops. Most

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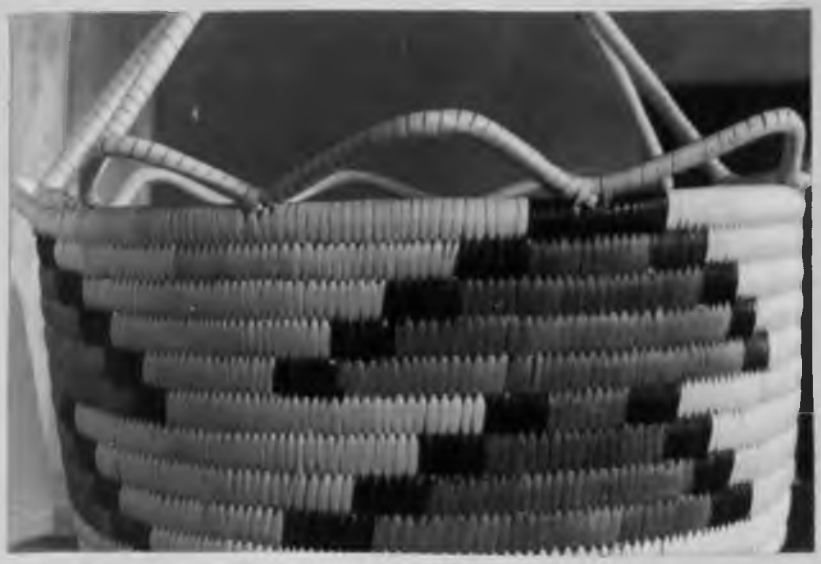
[1]Morris and Burgh, 1941, p.25 and Fig.10b

a



b

Figure 48

Wrapped weft

a- Basket in Mrs. F.S. Herndon's collection. (11.5 cm. high; 26.5 cm. wide; 32 cm. long)
b- Detail of wrapped weft on rim.

frequently she leaves these loops to form the rim of her basket (Fig.48b), but a few cases were found where she continued to coil her basket wall on above the looped row, giving the basket an open-work effect (Fig.48a). In the latter case, she may sew the next coil onto the wrapped coils before proceeding to carry the coils around horizontally again.

Because this is obviously a recent technic, dealers do not like it and are trying to discourage its appearance.

Secondary Features

Baskets made expressly for sale have a variety of secondary features such as handles, lids, and knobs which are made for decoration and for white man's use.

Lids

In aboriginal times the only lids made were flat plaques for the storage baskets (Fig.12a). Today approximately 12% of the close-stitch yucca baskets, 61% of the split-stitch baskets, and 36% of the spaced-stitched baskets have lids. The factor governing the making of lids is basically skill, for lids are notoriously difficult to make since they must fit exactly to be acceptable. Children just learning to make baskets never make lids, and many old basket makers never make them. One informant said "I had known how to make baskets for ten years before

Figure 49

Lidded baskets
Bought by the Papago Arts and Crafts Board

a- 5 cm. high; 8 cm. in diameter
b- 7 cm. high; 10 cm. in diameter
c- 9 cm. high; 14 cm. in diameter
d- 42 cm. high; 35 cm. in diameter
e- 43 cm. high; 41 cm. in diameter

I tried to make a lid" (D.C.). Another basket maker said she never had been able to make lids "they are too hard for me" (R.P.). Even a woman who knows how to make good lids will not put them on many of her baskets. For example one girl put lids on four of the thirty-seven baskets she made during the period of this study.

Ninety-four percent of the lids made today are constructed in the following manner: the basket maker makes a flat or slightly curved plaque the same shape as the top of the basket and one coil larger. When she has finished all except the last coil she turns the plaque wrong side up and sews a coil at right angles to the last coil of the plaque (Fig.49 a,c,&,e). She sews from one to four coils on. Then she finishes the last coil of the plaque. Sometimes the foundation for the insert coils is added and sewn onto the plaque, sometimes it is split, half being used for the insert and the other half for the last coil of the plaque, and sometimes the entire foundation is turned down and the outer ring of coiling on the plaque sewn on. The divided foundation is the most popular and the best looking. When done properly this results in a lid which fits tightly inside the basket.

Some lids are merely plaques which are attached to the wall of the basket by sewing a few strands of yucca or devil's claw.

Some of the other lids are made by bending the last few coils of the plaque so that they will fit over the outside of the basket (Fig. 49 d). A refinement of this method is used by Clamian Juan who indents the top four rows of her baskets the width of one coil in such a way that when the lid is on the basket it is flush with the wall of the basket on the outside (Fig.49b).

Some of the women at San Xavier have worked out a rather unique lid treatment. They start the lid by making a very large plaited knot, then they either braid or wrap about three inches of the yucca shreds projecting from each corner of the knot before they start to sew the coils. This makes a lid with an open center. (Examples of this technic were seen in the San Xavier mission store. The padre in charge had no idea who had made them.)

The earliest lids, those on salt and granary baskets, had no sort of lifting device, but now about thirty-four percent of the commercial lids are adorned with handles or knobs. The simplest handle is made by sewing two or three strands of twisted martynia into the center of the basket - a style which is very unsatisfactory because the loops pull out of the lid easily (Fig.29a). A more satisfactory handle is made by wrapping and sewing one or more short bunches of foundation and sewing them onto the lid in a loop (Fig. 25d). A still better handle is made

by taking part of the foundation directly out of the lid coils, binding them, and re-inserting them into the coils on the opposite side of the lid.

The other type of lifting device on a lid is a knob. The commonest form of knob is actually an enlarged starting knot. The woman makes any one of the knotted starting types, pulls it tight and then plaits another knot on the bottom from the ends that are left (see Fig.22). She repeats this process until she has a knob about two centimeters deep. Then she bends the ends around and starts coiling her lid. Knobs of this sort are usually made from a subtype a starting knot but occasionally from c or d. The other type of knob is shown in figure 28a. To make this type the basket maker coils a thimble-shaped knob, then she bends the coils out to start the actual lid. Manipulating such tight curves is so difficult that only the very best basket makers make coiled knobs.

Handles

Another secondary feature devised for commercial baskets is the handle. Today about twelve percent of the close-stitch yucca baskets have some sort of a handle across the top and about two percent have handles from the sides (Fig.51). This latter figure does not include tray-shaped baskets which nearly all have side handles (Fig.31).

There is no indication of handles on domestic baskets or on the commercial baskets until about 1920. The handle is another feature which has improved since the Board started buying baskets. At that time many of the handles were poorly made and fastened to the basket by wire. Anita Pablo discouraged the use of wire and paid a higher price for the basket if the handle were firm.

Today baskets are made in one of several ways, depending upon the origin of the foundation element. (Fig.50) About half of the top handles are made in the following manner (Fig.50a): when the sides of the basket are completed, the basket maker sews the top coil to within approximately ten centimeters of completion. Then she breaks off the beargrass bundle in her foundation and inserts yucca shavings or very fresh beargrass "because they are easier to bend" (R.P. and J. A.). Then she wraps this foundation by holding it out to her left and binding with her right hand. When one length of yucca is used up she splices a new one by inserting it through the last loop of the binding. Then she loops the bound coil to the opposite side of the basket, bends it along the top of the basket and sews it to the last top coil for two or three centimeters. She then wraps a short distance more to form a triangular hole and sews the foundation to the side of the bound element, thus making the handle two coils wide. The

a

b

c

d

e

f

Figure 51

Handled baskets
Bought by the Papago Arts and Crafts Board

1/12 actual size

variations in this technic can be seen in figure 50. Of these, figure 50b is the next most common, 50d and f the next, and the others are found so seldom that they are individual variations rather than types.

Less common than handles across the top of baskets are handles on the sides of baskets. The earliest example seen of a side handle was on a basket bought in 1918.

There are two types of side handles. The principle of one type is to extend the coil beyond the side of the basket, wrap it, and re-insert it a few inches farther on the coil. The principle of the other type is to wrap a separate piece of foundation and sew it onto the side - either horizontal or vertical. The former type is by far the commonest. There are several variations to this basic procedure. The very commonest is to extend the top coil of the basket either horizontally or vertically. Another method is to extend a coil in the side of the basket, and sew coils on top. This usually leaves a hole under the handle where the coil was extended, however some basket makers split their coil, carrying half of it along with the contour of the basket and wrapping the other half separately to form the handle. Then they re-insert it into the body coil. All of these methods vary from one to three coils.

KNOTLESS NETTING

The keeho, Papago burden carrier, is included here because it has been included in other basketry reports on the Papago and Pima, and because it has been subject to the same cultural changes as basketry. The keeho, however, is a basket in name only. The native word keeho has been translated carrying basket because of its function, but the construction technic is knotless netting rather than basketry, for they are made by interlacing twisted cordage. This same technic is used in Africa, North, South, and Central America, and Oceania for bags, caps, blankets and garments.[1] The only difference between these articles of knotless netting and the keeho is that the latter is streched over a framwork, thus making a container of permanent shape with rigid sides. The Papago refer to the technic as "knitting" or "crocheting," and do not consider it basketry.

In aboriginal households the keeho was an extremely important article. It was used for carrying foofstuffs, wood, household equipment, and even cradled babies.

The story of the origin of the keeho is in a rather jumbled state. Several informants said that they had heard so many versions of the story that they did not know which one was right and did not want to tell the wrong story.

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[1]Davidson, D. S., 1935

The basis for all these stories is the idea that the keeho walked until Coyote laughed at it and after that women had to carry the keeho. The two versions of the story obtained are:

> "When the old people started from the far country there were five groups. The keeho group was loaded with household goods. The Coyote Magician had not heard that they were supposed to take their household goods along so he began to laugh at the funny animals who were carrying the burdens. Soon the legs of the keehos became paralyzed and they could not walk, so the women had to carry them" (as told to F.S.H. about 1900).

> "Some women were out gathering wood when Coyote came along and laughed at the keehos walking, so they refused to walk and the women had to carry them on their backs" (F.S.H. & J.N.).

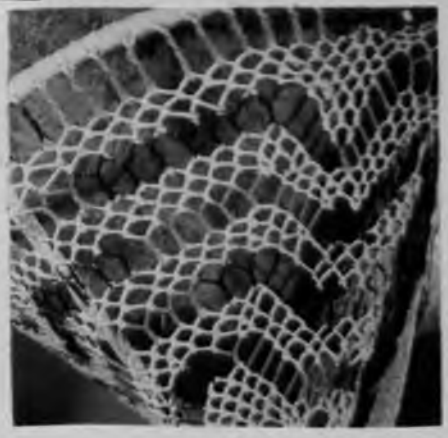
The manufacture of a keeho was a difficult process. The material for the netting was obtained from the fibre of the agave which grows in the mountains of the Papago country. In the old days women went to the mountains in groups to collect the leaves, but as the keeho lost its popularity, one woman and her husband or son would go, the woman to point out the young tender leaves she wanted, and the man to cut them for her. The first step in preparing the fibre is to boil the leaves for about a day, scrape off all the flesh with a scapula bone, boil the fibres again, and then rinse them thoroughly with water. Because this process requires so much water the women used to do it in the mountains at a spring, but when large parties stopped

going the women started bringing the leaves home for treatment. The cleaned fibres are then laid out in the sun for several days to bleach white. Bleaching stiffens the fibres so they have to be buried in damp soil for several more days to make them flexible enough to twist into cord. This cord is made by twisting a bunch of the fibre between the palm of the hand and the thigh or leg. When she had enough cord for a keeho the maker put her cord in a plaited basket, or more recently, in a trunk, until she was ready to use it. To make the netting, the woman started with a small ring of fibre to which she attached a row of loops. She proceeded by attaching a new row of loops onto the row she just finished in a combination of simple twisted loops (Fig.52d). In the old days she made the loops with her fingers, but after white contacts she used a needle made from an umbrella rib. The finished net was a limp cylinder, larger at one end than the other, and about twenty centimeters long. It was this net that she dampened and stretched over a framework of four sahuaro rib poles. First she tied the top row of loops to a wooden ring by binding agave cord around the ring and through the top loop. Then she put four sahuaro rib poles against the wooden ring and tied them securely in place with agave or recently horsehair cord. The poles were brought down so

a

b

c



d

Figure 52

Keeho

Made in 1941 for sale

as to form a cone, with the net stretched outside. The net was attached to the poles again at the bottom where they crossed. When the net was stretched over the framework, color was applied to the netting with the fingers to emphasize the openwork design. Two colors were used, reddish-brown and blue. The brown is made from clay. "Long ago the blue was made from the juice of the prickly pear fruit; when the white people first came, they used indigo blue; now they can't get indigo so they use regular laundry bluing" (L.B.). The last step in the manufacture was to tie the plaited backmat and tumpline in place.

Carrying vessels made in this way were indispensable in aboriginal times for transporting almost everything. So it is natural that they should have retained their popularity until the Papago started using horses and wagons. During the period that horses were becoming more popular the keeho was losing its popularity, but some were still needed. At this time a few women specialized in making them to trade to families that did not have horses (L.B.). The slow replacement was so speeded when the government sold wagons to the Papago that today a domestic keeho is non-existent. In fact, there are only two women on the entire reservation who still know how to make them. One woman (L.B.) learned when she was eight years old from her grandmother, whose whole family had made them for trading to other Papago families.

This woman makes a keeho exclusively for tourist trade, in the traditional method with what alterations changing conditions have made possible or imperative. The other woman who knows how to make them lives in Gu Achi, "She lives so far from materials that she never makes them. She tried one with string, but no one liked it" (A.C.P.). Since the latter woman does not make them and the former "has no daughters to teach how" (L. B.) the keeho is on the verge of extinction among the Papago. Among the Pima none have been made for at least twenty and probably forty years.

The passing of the keeho can be attributed to two things. One, the entire job of transporting wood, agricultural produce, and household articles has shifted from the woman's back to the horse and wagon; and two, the keeho has not become an article of tourist trade because there is so much labor involved in their construction that the price is prohibitive to all but the collector.

III - SOCIO-ECONOMIC ASPECTS OF BASKETRY

In addition to technological traits there are social and economic traits of the basketry complex which should be considered. Unfortunately little is known of the aboriginal socio-economic aspects of basketry production, so this discussion is confined to the present.

PRACTICES CONNECTED WITH BASKETRY MANUFACTURE

Many social patterns are involved in acquiring the ability to make baskets, from the initial steps of learning the basic technics to the final steps of perfecting the art. Whether or not a woman learns how to make baskets depends upon her own desire and upon her family. A woman in a family that makes baskets may learn from her mother; a woman in a family that does not make baskets may learn from her mother-in-law. In other words, women learn how to make baskets from their mothers, a few learn from their mothers-in-law, and still fewer learn from their aunts or sisters. This selection of the teacher is just another manifestation of friendships among members of the extended family. No woman would ask a stranger to teach her basket making (This is a practice not observed on the Pima Reservation where Annie Azule, when asked who would teach her, replied that a neighbor who was a friend but not a relative would gladly teach her). The only example of the paternal grandmother giving the instruction was Laura Baustemente who learned about sixty years ago. This shows a recent change, for Underhill was told that "The paternal grandmother

directs the women of the home group...and it was she who taught them cooking and basketry".[1] Very possibly this is a further manifestation of the shift in importance in the home from the elders to the younger money-makers. However, most of the old women have such poor eyesight that they can not make baskets well, so this practice may have always been more theoretical than actual, and now even the theory is gone.

About 1938 an attempt was made to teach basket making in the schools. A Papago woman came into the class room to give the instructions. Those girls who had learned at home did very well, but those who had not already learned, either because they did not want to or because their family did not know how, gained nothing from the school instructions. The reasons for the failure of this venture probably lie in the discrepancy between the home methods and the school methods. At home, learning to make baskets is play, whereas at school, it is work; at home they learn from relatives, at school they learn from a total stranger, and of course, those girls who really wanted to know how to make baskets had already learned.

Girls in basket making families learn from their mothers between the ages of three and fourteen by watching. For the first basket, the teacher makes the knot, puts in the first row or two of coiling, and then the girl copies as nearly as possible what her teacher has done. When the coil

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[1]Underhill, 1939, p.53

gets too crooked, the coils too big, or the stitches incorrectly spaced, the teacher picks up the piece and sews a few rows to straighten out the piece. There is no attempt to assist the child in directing the awl or putting the stitches through. She must watch carefully and then copy. Unless the girl is very young, by the second or third basket she is expected to make her own knot and proceed without further assistance. At this stage the teacher says "I see how good a head she has for baskets and see what she can do. If she is very poor I will show her more" (R.P.).

Having mastered the basic technics, the basket maker then works to improve her workmanship. In doing this, several interesting traits are called into play. Some are pure work and others are of a magical nature. The methods of improvement on her own consist of just sitting down and making basket after basket. One case is known of a girl who went off by herself and worked on baskets until she was able to do beautiful work (D.C.). There are also frequent reports of girls getting ideas for improved technics from their paternal aunts (L.P., Cecilia Orasco).

The commonest of these magical practices is the giving of the first basket a girl makes to an old and good basket-maker. Some informants report that this is only for luck and others report that the good basket maker may give the girl further instructions (R.P.). However, giving away the first basket is not a steadfast rule, for two baskets sold to the Arts and Crafts Board were the girl's first ones.

Another practice is reported in the following story:

> "There is an old woman who lives in a cave. Basket makers used to go to this cave. When they went in they had eerie sensations and chills. If they were able to stand the creepy feelings, they would be able to make better designs and better baskets" (S.I.).

Another version, apparently of the same practice was:

> "Somewhere just south of the Mexican Border there is a cave in which designs are painted on the wall. Women used to go there to look at the designs. When a woman had looked at the designs long enough to have them in her head she left a gift and walked out of the cave backward. She was not supposed to talk to anyone about the designs she had seen" (L.J. and R.P.).

Mrs. Xavier had heard this tale and tried to find the cave. The only one she found had designs that did not resemble basket designs and the gifts placed in the cave were mens, so she feels she probably did not find the correct cave.

On the same principle, but apparently without the magical element:

> "In the hills near San Luis there are some rocks that have designs on them. In the old days the women that had good heads for designs went up there to get their designs" (an old woman from San Luis, translated by L.J.).

And the Pimas have a similar practice of going to the "Striped rock" to obtain designs (M.L.).

Although no examples were found that could be definitely attributed to dreaming of designs or shapes, there were several cases of ideas "coming to" a woman. From the following story it would seem that the ideas which came to

women were considered beyond the ordinary:

> "Several years ago it came to me to make doll-shaped baskets. After I had made several of them I got very sick. They took me to medicine men all around (Kohatk) but nothing would cure me. Then they took me to a medicine man near Gila Bend. He told me that it was the doll-shaped baskets that were making me sick. He said that if I continued to make those baskets I would be very sick for two years and then I would get well and be able to make a great deal of money from those baskets, because I would be able to make them very well. But I had suffered so much already that I decided to stop making them. I got well right away and have not been sick since" (L.T.).

Mrs. Richmond also reported that one of her customers started making doll shaped baskets after the idea came to her in a dream one night.

An informant told Underhill:

> "We were told to work hard and a magic serpent will come and show us designs for our baskets" and "When I am making baskets I hear a voice speaking to me 'Put a cactus here, put a turtle there". [1]

It is only the exceptional basket maker who was aided in her basket making by the preceding practices. The average basket maker sticks fairly closely to the pattern taught her by her mother. Especially in making domestic baskets the women are consistent and retain the old traditions which have been used for generations and whose usefulness in fulfilling their household function has been proven. However, in making commercial baskets the functions are so varied that there is as yet no tradition; the women

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[1]Underhill, 1939, p.172

are free to vary their shapes and designs guided only by technological limitations, the desires of the tourists, and the sociological limitations of too obviously copying for fear of being talked about.

When she has finally found a style that she likes and from which she can get good money the woman will make only minor variations in her technics. The following list of yucca baskets made by the same women during the period of this study will show the average tendency of consistency. These baskets are listed in the approximate order in which they were made:

TABLE III

Maker	No. Bskts.	Shape[1]	Start[2] type	Stitch type	No. coils per 5 cm.	Foundation shape	Secondary[3] features	Decoration[4] materials	Design[5] elements	Number of elements	Overstitching[6]
Delphine Castillo	1	#20	g	Close	4	II	End handles	M.Y.R.	36e	4	None
	1	20	g		6		None	M.Y.	36e	4	
	2	4	b		5		None	M.Y.	36e	4	
	1	2	b		5		None	M.Y.	36b	4	
	3	20	g		4		End handles	M.Y.	36e	4	
	1	3	b		7		None	M.Y.	36b	4	
	1	3	b		5		Handle a	M.Y.	36e	4	
	10	1	b		8		None	M.Y.R.	36e	4	
	1	4	b		5		Lid c	M.Y.R.	36k	4	
	4	4	b		6		None	M.Y.	36e	4	
	1	3	b		5		Lid c	M.Y.R.	36e	4	
Ella Castillo	1	3	a	Close	7	II	None	M.	36l	4	None
	2	3	a		7		None	Y.	36j	4	
	9	3	a		6		Lid c	M.	35g	4	
	1	4	a		7		None	M.Y.	36e	4	
Amelia Miguel	4	3	c	Close	6	D	None	M.	38a	4	Single
	5	3	c		7		None	M.	42a	6	None
	2	3	c		6		Lid d	M.	38a	5	Single
	1	3	c		7		None	M.	42a	4	None
	1	3	c		7		None	M.	36m	3	None
	2	4	c	Spaced	4	O	Lid a	M.	40a	5	Single
	7	12	c	Close	5	D	Lid d	None			None
	1	11	c		7		Lid e	M.	36a	4	Single
Clamian Juan	1	3	c	Close	9	D	Lid e	M.	41a	5	Single
	1	3	c		8		Lid e	M.	41k	5	Single
	1	3	c		8		Lid e	M.	40e	4	Single
	8	1	c		8		None	M.	44b	7	Single
	1	3	c		8		None	M.	36c	6	None
	1	3	c		8		None	M.	36a	6	Crossed
	1	3	c		9		None	M.	36a	5	Crossed
	1	3	c		8		None	M.	35a	5	Single
	1	3	c		7		None	M.	40a	6	Crossed
	1	3	c		7		None	M.	35k	7	Crossed
	1	1	c		8		None	M.	36a	4	Crossed
	1	1	c		8		None	M.	41a	6	None
	3	18	g		7		None	M.	36d	7	Crossed
	1	18	g		8		None	M.	40a	6	Crossed
	3	3	c		10		None	M.	36a	6	Crossed

1 Numbers refer to shape number shown in Table II
2 Letters refer to starting methods shown in figures 21 and 22.
3 Lids: see figure 50; handles: see figure 49.
4 M. - martynia; Y. - green, unbleached yucca; R. - red yucca root.
5 Refers to figure number.
6 See figure 46.

PRACTICES REFLECTED IN BASKETRY INDUSTRY

Social Practices Reflected in Basketry Industry

In addition to those social practices directly concerned with the manufacture of baskets, some social practices unrelated or indirectly related to basketry were brought out in this study.

One was the practice of an individual requesting his own funerary furniture. Two examples were found: an elderly man who requested that a basketry water bottle be buried with him, and a woman who requested that her favorite baskets be buried with her. Apparently what is buried with a person is chosen in accordance with the deceased person's wishes rather than at the discretion of the relatives.

Another practice involves the close friendships between members of the extended family. This came out time and time again in inquiring about an informant. Invariably the woman recommended a sister, cousin, or an in-law. If asked about some one living near-by that was not related, the women usually did not know her at all. The only exception to this was a friendship between women who had followed the road construction gangs around the reservation for several years (A.T., L.T. and L.J.). The relationships were also illustrated by similarity in basketry technics among relatives.

The close relationship between Papago basketry and

economy was discussed in an earlier section, but there are certain economic aspects of basketry production that can be discussed separately.

One trait of Papago economy that was very well issustrated by several instances in this study of basketry is the division of labor by sexes. In the aboriginal economy men hunted, tended the fields, went on trading expeditions, made ropes, and wove cotton cloth. The women cared for the household, gathered wild food and wood, did very little agriculture, and made baskets and pottery. This division has been carried over into the money economy be a definite demarcation between men's and women's money. Except in the wealthy cattle-raising families the money that men earn goes into their own equipment and the money women earn goes into household and clothing or personal adornment. Several instances occurred which indicate that the men have no control over the money their wives earn:

> "She bought that with basket money. I don't like it, but it was her money" (J.R. referring to a pin his wife had on).
>
> "I just make baskets when there is something I want that my husband won't get for me" (C.L.).

In most cases, basket makers weave only when necessity demands: in the old days, when they needed baskets, and in modern times when they need money. However, there are a few examples of specialization. According to Dr. Underhill:

"A specialist exercised his craft as his part of the

> family work and was excused from other labor. He supplied the family with as much of his product as was needed for use and gifts, and the rest he traded ...Papago needs were such that the family unit required the full time labor of all its members and few thought of operating independently" [1]

Both Anita Pablo and Lupe Johnson's mother reported that in the old days women who could not get materials for basket making or did not have time to make baskets would obtain their baskets from women who were near the source of supply. A.C.P. also reports that women who were exceptionally good basket makers were asked by other women to make their gift baskets.

Some of the statistics on the present economic trends in basket making are interesting and may be of value for comparative purposes to future workers.

Age of basket makers:

> Of the six basket makers who make over $200. a year five are under 25 years of age and the other is 26. The best maker of yucca baskets, Delphine Castillo, is 19. The best maker of willow baskets, Mary Thomas is about 40, and her daughter who does as good work but has difficulty with her shapes is about 20.
>
> None of the women over 60 make good baskets. In most cases this is attributed to poor eyesight and in a few to the inability to prepare yucca correctly.

---

1 Underhill, 1939, p. 92

Approximate number of basket makers on the Papago Reservation:

(The following numbers are taken primarily from the Arts and Crafts Board records and include only women who have sold more than one basket. Although they have bought baskets from a representative group of basket makers, there are many women who sell to near-by trading posts, especially in the southwestern part of the Reservation)

Ali Ak Chin: 1 basket maker and one woman who makes brushes.

Ali Chukson: 17 (5 of which no longer make baskets) (representing four family groups)

Anegam: 35 (13 families)

Chiuk Shaik - 1

Chuichui: 12 (7 families)

Gu Achi: 66 (approx. 30 families)

Gu Oidak: 51 (approx. 20 families)

Guri Put Vo: 3 (3 families)

Haivana Nakya: 10 (5 families)

Hickiwan: 5 (2 families)

Hotason Vo: 7 (2 families)

Cajon Kuk: 4 (apparently 4 families)

Kohatk: 23 (# of families represented not known)

Ko Vaya: 7 (4 families)

Koson Vaya: 3 (1 family)

Lincoln: 3 (2)

Pan Tak: 14 (7 families)

Pisinimo: 3 on Arts and Crafts books, but probably more

Quijotoa: 3 (2 families)

San Luis: 9 (approx. 5 families)

San Serafin: 31 (approx. 14 families)

Sells: 18

Sikul-Himatk 9 (3 families)

Sil Nakya: 9

Stoa Pitck: 2

Supi Oidak: 9

Schuchuli: 2

San Xavier: approx. .25 (no statistical record)

Topawa: 11

Vainom Kug: 6

Ventana: 2

Viopuli: 11

Total 422

CONCLUSION

Because the Papago basket makers are individuals who are inhibited by relatively few technological and sociological limitations, it is impossible to cover all of the variations that have occurred in Papago basketry in the last thirty years. However, it seems certain from the material examined in the present study that any other variations which have occurred can be classified within the technological patterns described. For example, one woman in Ali Chukson has made several baskets with alternate rows of spaced and split stitches.

The socio-economic aspects of the problem have not been as completely covered because of insufficient data or other limitations. The problems which arose that could not be answered are listed here to show that the problems are present, in the hope that future workers will be able to obtain more information about them.

For one, I am convinced that there are inter-village variations in a few technical methods such as size of coil and amount of hammering, but the production of baskets is not uniform enough to make possible a statistical determination of these variations. For example, in one village three basket makers made over a hundred baskets in 1941, and in another village twenty listed basket makers made only seven baskets during the same time period.

The only definite evidence of inter-village variations is in starting methods (see Table I).

For another, there were just enough indications of family specialization to suggest its presence, but now this tendency is being too much obliterated by women making baskets to fill specific orders for any details to be worked out concerning family specialization. For example, one family started making a certain style of trays, but other women received so many requests to make these trays that they are now made universally.

A difficulty was also encountered in attempting to trace origins, for the Papago's time concepts are "twenty-five years ago", "forty years ago," "when the white people first came," "the old days," and "not very long ago" - all used interchangeably. So when documentary or circumstantial evidence was lacking, the time of innovations could only be approximated from the wide range of answers received. Some of the questions about innovations will probably be answered when the Ventana Cave basketry is described. From this material it may be possible to determine whether Papago basketry is an indigenous development or whether the close resemblances to basketry of neighboring groups indicates recent diffusion. Unless a close relationship is found between aboriginal Papago and Ventana Cave basketry, I would be inclined to consider the possibility that Papago plaiting is a trait

borrowed from the west. Connections can be based not only on technical similarities, but also on other points of similarity in the culture of the Papago with the Sonorans and the southern Californians[1] and the fact that the Papago made trading trips into these areas.[2]

Another question which arose that it is many years too late to answer is: were there as many differences between basketry of the northern and southern Papago in aboriginal times as there were in recent years? Or is it simply that the southern villages assimilated white culture faster and therefore traits such as twined strainers, small spaced-stitch baskets, and pseudo-coiling were dropped earlier and have been forgotten? Kissell did not include the distribution of traits she mentioned, so the only light on this question is the fact that there was earlier acculturation in the south and that as late as 1929 the people in Kohatk hid from any stranger entering the village.

Some of the problems which arose in the study can be answered. One of these was worked out at the suggestion of Miss Kissell that future workers unearth lore pertaining to the textile arts of the Papago. Out of approx-

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[1]Spier, 1936. Underhill, 1939, Appendix II

[2]Underhill, p. 22, 103-4

imately thirty people who were asked if they knew stories about baskets, only four knew any. The others answered in one of two ways: "I have never heard any" or "I did not bother to listen to the stories my father used to tell in the evenings. Now I am very sorry I didn't." In general, people from Kohatk, the most conservative village on the Reservation, knew the most stories. The present study also corroborated Kissel's conclusion that Papago basketry designs have no "meaning", except the modern picture variety.

The main problem in this study, to determine what changes have taken place in Papago basketry in the last thirty years and the factors involved in these changes, can best be summarized by the following outline:

Aboriginal Objects	Present Use	Present Forms
Twined strainer	None	Metal or cloth sieve
Twined door	None	Planed wood door
Cradle	None	Blanket hammock
Water bottle	None	Canteen or bucket
Pseudo-coiled granary	None	Box, can, etc.
Coiled granary	None	Box, can, etc.
Salt basket	None	Box, sack, etc.
Plaited strainer	Household Ceremonies Sale	Same Same Same
Keeho	Sale	Same Wagon, sack, etc.

Plaited mat	Sale	Same
Wine basket	Ceremonies	Same
	Household	Same
Gift basket	Gift	Same
	Sale	Same
Medicine basket	Ceremonies	Same
	Sale	Same
Parching tray	Household	Same
	Sale	Changed
Plaited basket	Household (seldom)	Same
	Sale	Changed
Headring	Household	Changed
	Sale	Same
Shelves	Household	Changed
Coiled basket	Household	Same
	Sale	Changed

I- Extinction of basketry forms

A- Factors causing the extinction of basketry forms

1- Replacement by a more efficient form

Cradles
Twined strainers
Doors
Water bottles

2- Replacement by a form more easily obtained

Pseudo-coiled granaries
Coiled granaries
Salt baskets

B- Methods of accomplishing extinction

1- Young women did not learn the technic

"I did not learn how to make granaries when I was little because they were too much trouble." (E.C.)

2- Older women stopped making the articles.

"The new things were better." (J.A.)
"They are too troublesome and nobody wants them anymore." (Girl in Cowlic to L.J.)
"You couldn't get a baby into one of those old cradles today." (wife of J.R.)

II- Retention of basketry forms

A- Factors causing the retention of aboriginal forms

1- Anglo-American substitutes are not considered efficient.

Parching trays
Wine baskets
Gift baskets
Medicine basket

2- A new use found in the Anglo-American culture

Plaited strainers
Keeho
Plaited mats

Gift baskets
Medicine basket
Headring
Coiled baskets of willow

B- Methods of accomplishing retention

1- Rejection of substituted articles for use in ceremonies.
"Wine is not as good when it is made in a bucket." (L.J.)

2- Retention of the old from pure habit
"I prefer a basket because that is what I am used to." (L.T.)

3- Retention of the old for aesthetic or sentimental reasons.
"I keep those baskets because they are so pretty." (L.J.)

4- Retention of the old because of inability to afford the new.
"I am going to throw that old plaited basket away as soon as I can buy a suitcase." (wife of J.R.)

5- To obtain money
"I never use those any more, I just make them to sell when someone wants one." (L.B.)

III- Diversification of forms

A- Factors causing the diversification of forms

1- New use - sale

Coiled baskets
Plaited baskets
Parching tray

2- Material from Papago culture replaced by material from Anglo-American culture, with the form remaining unchanged.

Household headrings
Shelves

B- Methods of accomplishing diversification

1- An attempt to cope with a new use

"I put in the colored thread to see how the traders would like it." (Cecilia Orasco to A.C.P.)

2- Fewer restrictions imposed by new use

"Yucca wouldn't last around the house." (A.C.P.)

3- Individual inspiration

"It came to me one night to make basket dolls." (L.T.)

From a more tangible source, such as the Silver Leaf Lard design.

4- High percentage of poor workmanship

a- New materials require revision of technics
"Many women do not yet know how to dampen yucca right." (A.C.P.)

b- More rapid production in order to make more money.
"She always makes so many baskets so she'll get more money, but they are so bad..." (A.C.P.)

c- Less pride in workmanship
"She can do very nice work when she wants to." (D.C.)

IV- Reduction of forms - a combination of retention and diversification of replacement

A- Factors causing the reduced production of basketry forms.

1- No completely efficient substitute - i.e. - retention for one or two specific purposes and extinction for other uses.

Plaited strainer still used in ceremonies and some household activities.

2- An efficient substitute found, but a new use developed in the Anglo-American culture, i.e, no longer used for household purposes but occasionally made for sale purposes.

Keeho
Mats

B- Methods of accomplishing reduction

Same as the methods of extinction plus the methods of retention or diversification.

All of these factors have come about as the direct result of the acculturation by western civilization. Basketry is a culture complex which has become completely integrated, being adjusted to the Anglo-American culture as a trade article and used as a means for obtaining money in the new economy, while on the other side, some baskets are still made for the as-yet unchanged aspects of religious, social, and economic procedure, and they are still made in a basically Papago way. So, what changes have been wrought in basketry, through contact, mirror, in a sense, the effects of acculturation on the total Papago culture.

Appendix A - Glossary

The following definitions for the basketry technics and traits used in this paper are presented to show where Papago basketry and its variations fit into other classifications of basketry and to show which technical variations are of enough importance to warrant separate classification in the study of Papago basketry. It is recognized that in studying basketry in other groups, technics omitted here are important, and some of the types included here may be lumped together or omitted entirely. Whatever aspects of basketry technics are emphasized in one study, those technics should fit into a general - but unfortunately not yet standardized - classification.

The following classification has been worked out with considerations for the traits whose comparative value is recognized by the Papago basket makers.

Basketry - construction by interweaving two or more untwisted elements without the aid of an auxiliary framework. The term refers to technic of construction rather than shape or use of the finished product.

I Coiled Basketry - the technic of constructing basketry in which one unit, composed of one or several fibres, is coiled spirally and attached to the previous coil by a second continuous element sewn over the top of the coil

and through the previous coil, back over the top, etc. Also referred to as sewn basketry.

A - As a result of variations in the placement of the coils the following types are found:

1-Close Coiling - In construction, each new coil is placed directly on top of the former one and bound so closely that little or no light can be seen between the coils. Close coiling is achieved by using a simple stitch. Term used by Morris and Burgh.

a- In close coiling the following sub-types occur as the result of variations in the placement of the stitches in relationship to other stitches on the same row.

Spaced-stitch close coiling- the binding elements, or weft, are placed far enough apart for the foundation, or warp, to contribute to the texture of the finished surface.

Also referred to as:

Coarse coiling - Kissell

Bee-skep coil -Encyclopaedia Britannica

Open coil -Arts and Crafts Board

Lazy squaw stitch - basket dealers

Close-stitch close coiling - the binding elements are placed so close together that they meet edge

to edge or overlap. The texture of the basket is composed exclusively of the sewing material. (Occasional split stitches or gaps between stitches may occur as the result of poor workmanship).

b- In close coiling, the following sub-types occur as the result of variations in the placement of the stitches in relationship to the stitches on the previous coil:

Split-stitch close coiling - each loop of the weft is inserted through the exact center of the stitch on the previous coil, thus splitting it at the top. Also referred to as:

Furcate - Encyclopaedia Britannica

Split coil - Arts and Crafts Board

Non-interlocking stitch close coiling - each loop of the weft is inserted on the work surface at one side of the stitch on the previous coil and emerges on the same side of the stitch on the reverse side. Also referred to as:

Uninterlocking - Morris and Burgh

Interlocking stitch- each loop of the weft is inserted on the work surface at one side of the stitch on the previous coil and is put through diagonally so that it emerges on the other side of the previous stitch on the reverse side.

Wrapped coil- the weft is bound around the foundation and is not attached to the preceding coil.

2-Spaced Coiling - In construction, each new coil is held above the former coil far enough for light to be seen between the coils. Spaced coiling is achieved by using an intricate stitch.[1]

b- As a result of variations in the construction of the foundation element, the following major types occur:

No foundation - Coil without foundation: the sewing elements are looped and interlocked without a foundation. No true coil without foundation is found in Papago basketry, for the technic is used with twisted fibres, and therefore considered netting in this paper.

Large elements - including any combination of whole rods:

Single rod
Two-rod vertical and horizontal
Three-rod triangular (Weltfish)
Includes the 2 and 3-rod combination in Morris' Bunched - classification.

Small Elements - including:

a- Grass

b- Shredded

Also referred to as:

Multiple foundation - Kissell
Splint foundation - Mason
Bundle "plant materials used alone" - Morris and Burgh
(the term bundle is rejected because its use has become ambiguous)

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[1]Morris and Burgh, 1941, p.6

Combinations - including:

Two-rod-and-small elements
Three-rod-and-small elements

Also referred to as:

Bundle "plant materials in combination with rods" - Morris and Burgh

Other aspects of coiled basketry which occur regardless of the above types and subtypes:

Duplex stitch - Two weft elements of different colors sewed simultaneously.

Expansion stitch - An additional stitch taken to keep the normal stitches from separating too widely, as they would otherwise do, owing to the rapid expansion of sharp curve of the spiral.[1]

Fag end - "The end of a splint which is present on the work surface of a coiled basket. It marks the place where a new length of splint is spliced on." [2]

Moving end -"The end of a splint, which, after being sewn along a coil is clipped off on the reverse surface...or folded under the stitches."[3]

Overstitches - auxiliary strands sewn over the coils. They have no function in the construction.

May be on the rim.
Also referred to as:
False braid -Morris and Burgh
Herringbone rim - Mason

May be on the body

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[1]Morris and Burgh, 1941, p.61

[2]ibid, p.61

[3]ibid. p.62

Reverse surface - "The surface...upon which the sewing awl emerges"[1]

Splice - "A point along a coil where one spling ends and a new one is introduced. It is marked by the presence of the fag end on the work surface and the moving end on the reverse surface."[2]

Start - refers to the first step in actual construction of the basket - i.e., the way in which the first coil is fastened.

Also referred to as:

Center - Morris

Laying the foundation - Mason

Work surface - "The surface...on which the sewing awl is inserted to make a path for the splint."[3]

II-Pseudo-Coiled Basketry - "Binding spirally with joint active and passive elements."[4]

Also referred to as:
A coiled technic with osier withes - Barrows
Bird's nest coil - Tschopik and Weltfish

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[1]Morris and Burgh, 1941, p. 62

[2]ibid, p. 62

[3]ibid, p. 63

[4]Kissell, 1916, p. 263

III-Plaited Basketry - The technic of constructing basketry in which two elements of equal pliability and width are interwoven. i.e., plaiting of crossed active elements.

As a result of variations in the rhythm of interweaving the warp and weft the following subtypes are found:

A-Checkered plaiting -plaiting in an under-one-over-one rhythm.

Also referred to as:

Checkerwork - Mason

B- Twilled plaiting - plaiting in any combination of more than one-one. May be 2-2, 2-3, etc.

Also referred to as:

Twilled work - Mason

Terms used in referring to plaited basketry:

Rhythm - the number of strips in each set that are crossed over by the strips in the other set.

Also referred to as:

Interval - Morris

IV-Twined Basketry - The technic of constructing basketry in which passive warp elements are bound together by active weft elements.

Twined types are included under plaited basketry by Mason and Morris. As a result of variations in the

method of binding the warps together, the following sub-types occur:

A-Wrapped twining- binding a series of parallel rods together by one pliable element which is wrapped once around each warp rod before proceeding to the next. Wrapping elements may be close or spaced at intervals.

Also referred to as:

Wrapped work - Mason

B- Twisted twining -binding a series of parallel rods together by working with two weft elements crossed between each warp element.

Also referred to as:

Twined work - Mason

C-Wickered twining, or Wickerwork - binding a series of parallel rods together by interweaving the weft elements in a one-one rhythm.

D-Latticed twining -binding a series of parallel rods together by placing a rod at right angles to and on top of the warp elements, and binding the two together by a third flexible element.

Can be broken down into the following subtypes:

Lattice wrapped weave - Kissell

Lattice twined weaving - Mason, etc.

Wrapped twining - Douglas

Netting - The technic of construction by interweaving pliable twisted elements without the aid of a frame. As the result of variations in the method of interweaving the following types occur:

A-Knotless - the cord is attached to the previously made row by interlocking the loops. (see Davidson, 1935, for types of knotless netting)

Also referred to as:

Coil without foundation - Kissell

B-Knotted Netting - the working cord is firmly attached to the previous row by tying knots at the intersections.

Also referred to as:

Netting - Encyclopaedia Britannica

APPENDIX B - INTER-VILLAGE RELATIONSHIPS

The history of settlement in the various Papago villages is closely inter-related with the cultural differences among the Papago. For, like nearly every other group of people, the Papago have frequently settled in one village and then all, or part, of the population have moved to other villages. It is the interest and problem of archeologists to determine the early movements and relationships between villages, but the more recent movements are of interest in connection with the modern variations in a trait complex such as basketry. Village movements are not something of slight consequence, for all the Papago are very conscious of the differences and relationships between villages and districts. The most basic differences exist between the northern and southern villages. "We do it this way down here, but up north they do it differently" is heard over and over in regard to language, behaviour, and even baskets. They also recognize speech differences, between smaller groups of villages within the dialectic groups. All told, they recognize eleven villages on the reservation, plus several in Mexico, from which the male inhabitants of other villages have come.

The following history of the Papago villages was compiled from material collected by Alden W. Jones. He came to these conclusions after talking to Papagos from

various parts of the reservation and cross-checking this information with that obtained by Kino, Lumholtz and Hoover. This is presented, not as an absolutely authentic history of the villages, but as a history that the Papago believe, and that cross-checks in many instances with historic records. Also, there seems to be a closer correlation between this history and basketry than either the history obtained by Hoover or the linguistic groups outlined by Underhill, which can probably be explained by the earlier and the more recent movements which are included here.

Chuichu and Vaivo Vo

Dialect: Kohatk plus Sobaipuri and Gu Schuatak.

History: Prior to the railroad, the River Pimans lived all around the Casa Grande region. When the railroad was built in 1880, the Indians were pushed to both sides, so when the reservations were established, the groups that had settled in Chuichu and Vaivo Vo were separated from their relatives north of the railroad. From 1912 to 1932 these villages were under the administration of Sacaton, but since they were south of the white man's strip, they began to have more contact and intermarriage with Kohatk than with the Sacaton Pimas. In other words, the inhabitants of Chuichu and Vaivo Vo were the same as the Gila River Pimans until they were isolated in 1880 and started having intensive contacts with the Kohatks. Since 1932 they have been administered from Sells.

Movements:

Vaivo Vo - Has not spread out or moved appreciably.

Chuichu - Some of the people moved to Shopishk.

Kohatk

Dialect: Kohatk

History: The Kohatk formerly lived in the north Santa Rosa valley with a large settlement north of the Picacho Peaks. About 1730 they were run out of the Picacho Peaks region by the Apache raids and they took refuge with their relatives in the Santa Rosa Valley at the now abandoned village of Sif Oidak.

Movements: the people from Sif Oidak spread out to:

Kohatk - Before the well was drilled its well village was Sif Vaya.

Tat Momoli - Which was set up as a separate Reservation under Sacaton in 1912 and was brought under the Sells administration in 1932.

Anegam - Underhill reports that Anegam people moved in after Ben McKinney's ranch broke up from Salt Well, but Mr. Jones found no further substantiation of this and is inclined to believe that some of them may have moved in from Copperosity or Muik Vaya.

Totopitk

Dialect: Hohohula plus Kohatk

Trade with Kaka and Ventana

Probable affiliation with Sif Oidak

Ahak Owuch

Dialect: Hohohula

In 1880 the village of Ahak Owuch broke up when its inhabitants moved out to build the railroads. Some of the people probably moved to Kaka at this time. After the railroad was finished they settled in:

Gila Bend

Ak Chin, Maricopa Reservation

Kaka - hill village: Mui Vaya

Today there is a great deal of moving between Gila Bend and Kaka. Ventana was inhabited by Kaka people after 1933 when Ben McKinney's Ranch was abandoned. People are still moving in to take advantage of the well.

Old Hickiwan

Dialect: Sohob Makgum Hohohula plus Owatkam

Today a sherd area marks the large village reported by Kino and from which the inhabitants of that section say their ancestors came.

People from Old Hickiwan settled in:

Hickiwan

Tatia Toak

Emika
Stoapitk — Today considered one group
With a well at Chuili Kam

Hotason Vo
Sikort Chuapo
A man by the name of Redondo drilled a well at the site of Sikort Chuapo, Pozo Redondo. When he abandoned his well in 1930, many of the families from Hotason Vo moved in. Between 1930 and 1935 it was a large village. But there was a murder and resultant trouble, so in 1935 the population moved back to Hotason Vo.

Chuchuil
Until 1927 Chuchuli (Gunsight) was a white man's ranch. When the white ranchers left the Reservation in 1927 a few families from Hotason Vo and later directly from Sikort Chuapo, moved in to use the well. Today there are about 10 families there.

Gu Vo
Gu Vo may have been a defense village and it may be the offshoot of an older village to the northeast. One group stayed in, or moved to, Gu Vo. Gu Vo had wells at Kuakatch, Tonoka, and the now abandoned village of Chagit Vo.
Another group from Gu Vo settled:
Pia Oik
Sikort Wuacho — with the well at Siovi Shuatak

In the last three or four years many people from Sikort Wuacho have moved to Suwuki Tonk.

Ali Akchin
The inhabitants of Ali Akchin have been termed the Sand Papago. They came into Ali Akchin from Mexico during the Revolt in 1927 when they were driven out of Sonoita.
They are the same group of people that are still living in Quitovac, Sonora (Jones has found no substantiation of Hoover's belief that the Quitovak was a defense village).

Cowlic
Part of the Caborca group moved to Cowlic. They are still an isolated group, speaking Owatakam.

Achi

From Achi people have moved to:

Kaitch Murk
With wells at Noipa Kam
Ahe Vonam
Quijotoa

Achi
With well at Sil Nakya
Ali Oidak
With well at Ohot Vaya

Make up the present village of Gu Achi

Katamut Kug
With well at Ko Vaya
Kaitch Murk

Gurli Put Vo
Well at Quijotoa
Sikul Himatk
Well at Quijotoa
San Xavier
When the Franciscans came into San Xavier in the 1760's it was re-settled by an Achi group.

San Seraphin

Jones has not been able to discern positively from the Indians where the San Seraphin villages took refuge during the Apache raids.

The well villages for San Seraphin:

Makgum Havaka
Hoi Oidak
Pipyak
Kom Vaya (Comobabi)
Suwuji Vaya

One group of people that moved out from San Seraphin do not move back and forth and have lost San Seraphin affiliations.

These people settled:

Pavo Kug
Pan Tak
Viopuli
Schuchk
Aguirre Vaya
Chiawuli Tak

Kui Tak (Batki)

A second Totokavanya group moved out to the following villages when Batki was destroyed by the Apaches:

Gu Oidak
Vainum

Kaihon Kug
Ali Molina
Moved to Ali Chukson around 1890

Gu Oidak people had wells at:
Nolia
San Luis
Santa Lucia
Lincon
Koson Vaya
Suwuki Chuapo
Well for Ali Molina, and later Ali Chukson:
Artesa
Gu Chuapo
San Juan Springs

Vopolo Havoka - The people formerly living in Vopolo Havoka moved to:

Topawa
With a well at Chuili Shaik
Cowlic
About 1904 all but a few of the families left in Vopolo Havaka moved to Cowlic
Well at Kahachi Miliuk

Old Komelik
Moved to:
Komelik - with wells at: Pitoi and Chutum Vaya.
Some present Komelik people were born in Old Komelik.
Supi Oidak - with wells at Utevak
Choulic - with a well at Chui Vaya

Kupk
According to Hoover, the following villages are descended from Kupk, but the Indians that Mr. Jones talked with feel they are descended from Hali murk.
Still about 5 families in Kupk. Others settled in:
Vaison Chin
Hali Murk
Tat Kam Vaya
Pisinimo
Inhabited in the last 25 years, after the well was drilled.
Kom Vo

Chukut Kug

Was a very large village about two generations ago, but now only two families live there. People have moved out to:

Tucson
Sells
Toro's Ranch
Kuts Kug
Stan Shuatuk
Ak Komelic (Akamulilik)
Pozo Verde

Some in Pozo Verde moved back into the United States and settled San Miguel.

Buenos Aires
Ak Chut Vaya

An old village near San Miguel, displaced almost completely by San Miguel.

Old Vamori

In the last generation the inhabitants of Old Vamori have moved to:

Vamori
Itak
Vakamok
San Rafael

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